National Park Service
U.S. Department of the Interior

Bryce Canyon National Park
Utah

Mossy Cave Trail Rehabilitation and Resource Protection Environmental Assessment

June 2006

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Environmental Assessment

Mossy Cave Trail Rehabilitation

Bryce Canyon

National Park • Utah

Summary

Bryce Canyon National Park proposes to rehabilitate portions of the Mossy Cave Trail in order to return the trail to good condition and provide safe access to the waterfall and Mossy Cave while protecting area resources. The Mossy Cave Trail is located in Water Canyon along Highway 12 in Garfield County, Utah. The trail is heavily used by the public due to the relatively level terrain and short hiking distance to the cave and waterfall. In 2003, monsoonal rains caused the stream along the trail to shift course. That storm and subsequent rain events damaged several areas of the trail and the trail is now in poor condition and at risk of being lost altogether. A portion of the trail that is on the stream bed would be reinforced with large boulders to ensure that it does not disappear during every substantial rain event. The first bridge abutment on the second bridge would be reinforced with small rocks as well as large boulders. Part of the trail would be rerouted to avoid a section that has been badly undercut due to the previous placement of a culvert on a small spring. Mossy Cave (a rock alcove) is a major destination for many park visitors, and visitors are entering the rock alcove and damaging the hanging gardens and geologic formations and causing impacts to the cave floor. At the entrance to Mossy Cave, a small viewing platform would be constructed to prevent visitors from entering the cave and further damaging cave resources. To educate the public about the resources and history of the area, waysides would be developed and installed along the trail and at the cave.

This Environmental Assessment evaluates two alternatives; a No-Action Alternative and an Action Alternative. The No-Action Alternative is used as a baseline assessment. The Action Alternative addresses the rehabilitation and stabilization of Mossy Cave Trail and protection of cave resources while allowing some level of visitor access.

This Environmental Assessment has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide a decision-making framework that 1) analyzes a reasonable range of alternatives to meet project objectives, 2) evaluates potential issues and impacts to Bryce Canyon National Park's resources and values, and 3) identifies mitigation measures to lessen the degree or extent of these impacts. Resource topics have been addressed in this document because the resultant impacts may be greater-than-minor. These topics include soils, vegetation, visitor use and experience, and water resources. All other resource topics have been dismissed because the project would result in negligible or minor effects to those resources. No major effects are anticipated as a result of this project. Public scoping was conducted to assist with the development of this document.

Public Comment

If you wish to comment on the environmental assessment, you may mail comments to the name and address below or post comments online at http://parkplanning.nps.gov/. This environmental assessment will be on public review for 30 days. It is the practice of the NPS to make all comments, including names and addresses of respondents who provide that information, available for public review following the conclusion of the environmental assessment process.

Individuals may request that the NPS withhold their name and/or address from public disclosure. If you wish to do this, you must state this prominently at the beginning of your comment. Commentators using the website can make such a request by checking the box "keep my contact information private." NPS will honor such requests to the extent allowable by law, but you should be aware that NPS may still be required to disclose your name and address pursuant to the Freedom of Information Act. We will make all submissions from organizations, businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety.

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PURPOSE AND NEED

INTRODUCTION

The area known as Bryce Canyon National Park was set aside as a national monument in 1923. Interest in the area continued to grow after the declaration of the new national monument. In 1924, Bryce Canyon National Monument was declared Utah National Park. An act of Congress in 1928 increased the amount of protected land to double what was already protected by the national park (now 35,000 acres). This addition of land was accompanied by another name change as Bryce Canyon National Park was officially designated on February 25, 1928. The national monument, and later park, was established to protect the fascinating geologic structures known as hoodoos and other natural and cultural resources.

Bryce Canyon National Park is located on the western edge of the Colorado Plateau (Figure 1). The park lies in portions of two counties in Utah: Garfield and Kane Counties. The entrance of the park is approximately 210 miles southeast of Salt Lake City, Utah.

The park is located on the southeast escarpment of the Paunsaugunt Plateau where the plateau breaks abruptly to the east and south in a series of steep walls and slopes. The park is composed of numerous natural amphitheaters cut into the Pink Cliffs formation on this eastern side of the plateau. There is great contrast between the colorful lowlands along the eastern flank of the park and timbered hillsides and tablelands to the west. Elevations range from 6,580 feet to 9,115 feet above sea level.

Most of the land surrounding Bryce Canyon National Park is federally owned and managed by the U.S. Forest Service (USFS) as part of the Powell Ranger District of Dixie National Forest. The Bureau of Land Management (BLM) manages land along the northern and northeastern park boundaries. Remaining land in the area is owned by the State of Utah and private landowners.

The Mossy Cave Trail is in the northern section of the park, located on Highway 12, approximately 4 miles east of the intersection of Highways 12 and 63 (Figure 2). There is a small parking area on the south-west side of Highway 12. The trail is approximately 0.9 mile, round trip.

This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) (40 CFR 1508.9), and the National Park Service Director's Order (DO)-12 (*Conservation Planning, Environmental Impact Analysis, and Decision-making*).

FIGURE 1: UTAH AREA MAP

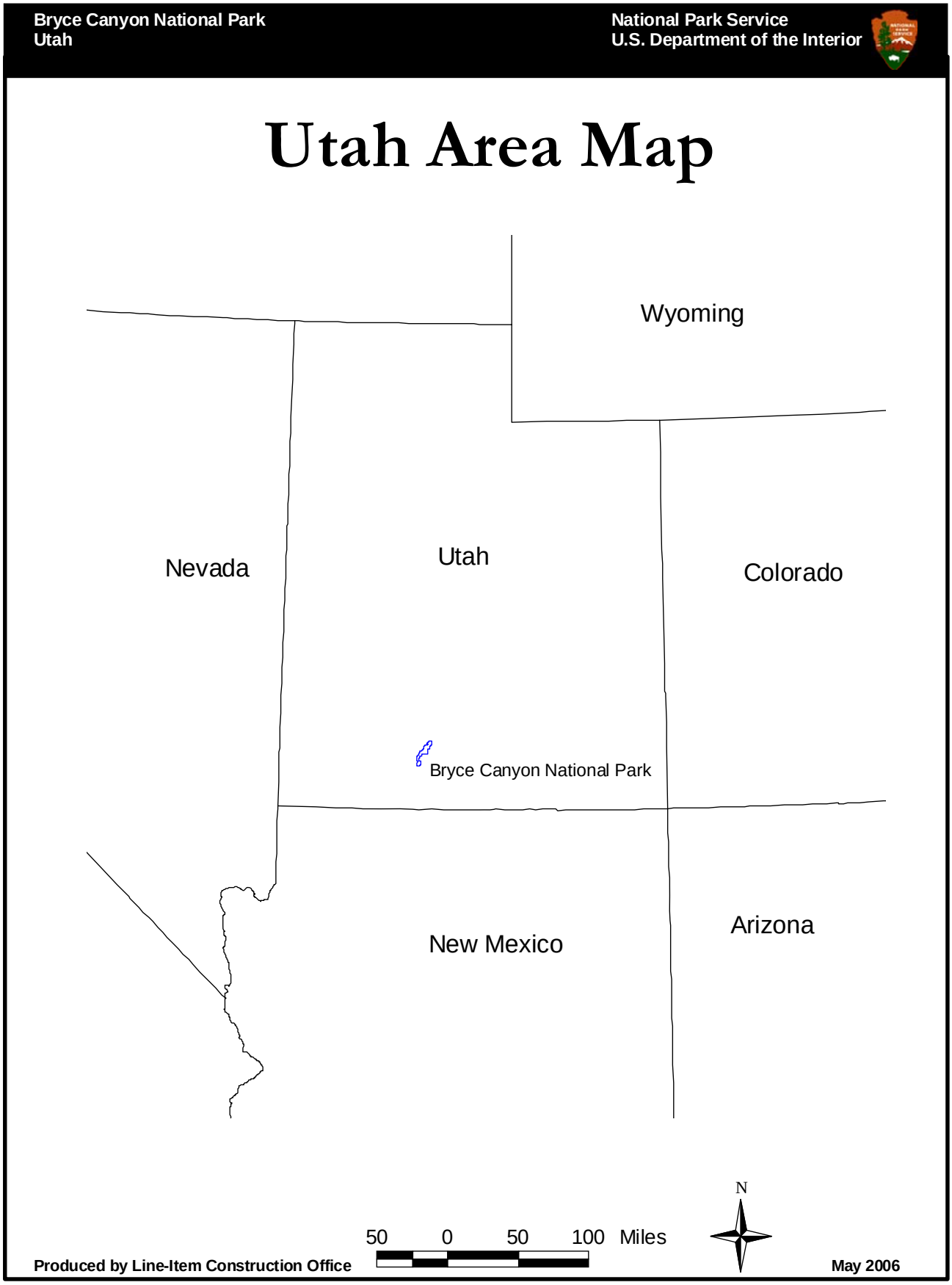
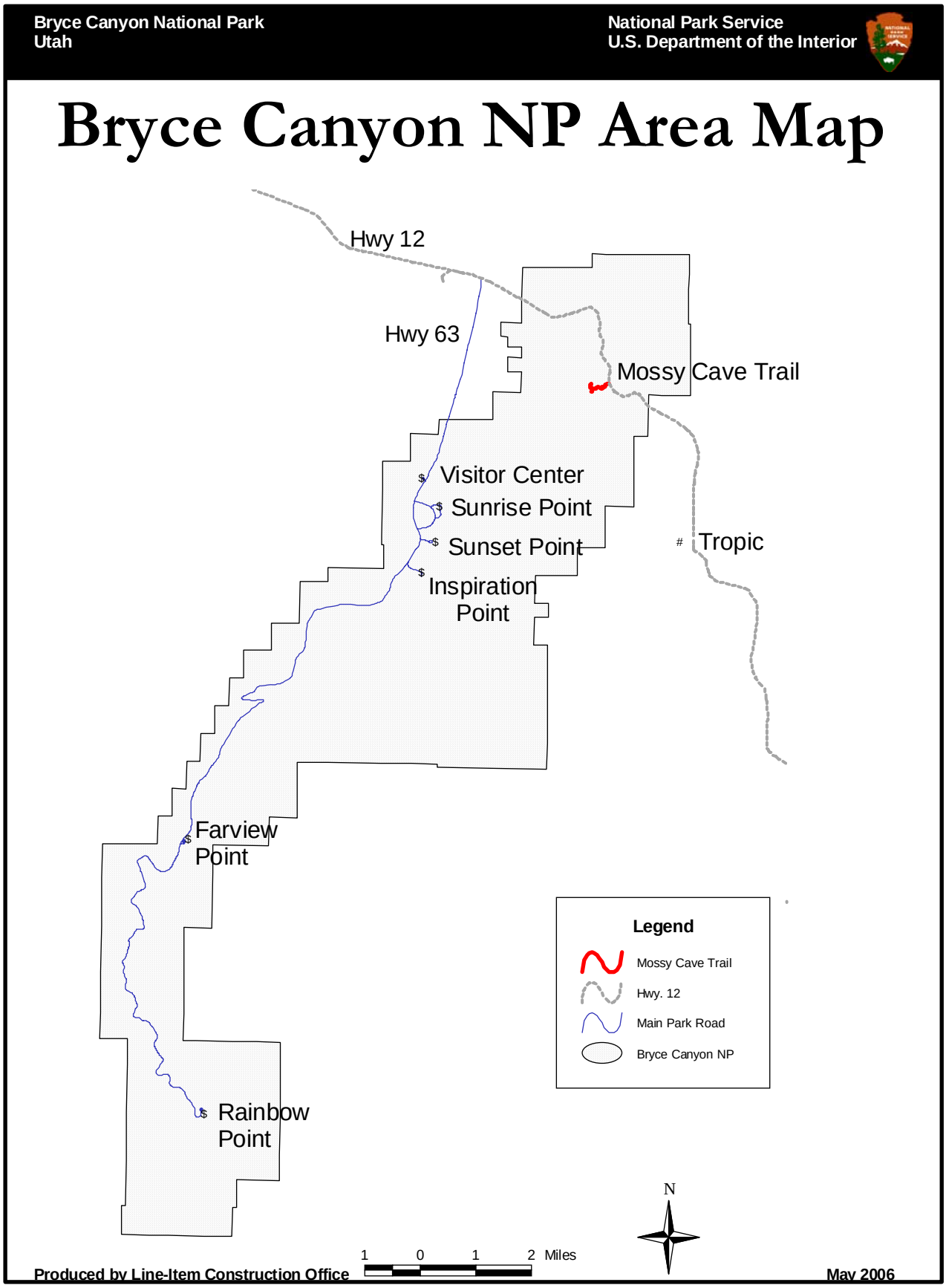


FIGURE 2: BRYCE CANYON NATIONAL PARK MAP



PURPOSE

The purpose of this project is to provide visitors with the opportunity to have a safe and rewarding experience during their visit to Bryce Canyon NP, while protecting the qualities and values of the park's natural and cultural resources. The project proposes to repair damage to Mossy Cave Trail returning the trail to good condition, and prevent future damage. The project also proposes to prevent damage to the natural resources of Mossy Cave, while ensuring some level of visitor access.

NEED

Mossy Cave Tail requires rehabilitation to repair damage due to erosion. In 2003, monsoon rains caused a local stream to shift course and undercut a large portion of the trail. That storm, and subsequent rain events, caused the trail to erode, reducing the width of the hiking surface. Materials that support nearby bridge abutments have also been eroding, which is beginning to undercut the bridge support. On one area of the trail, a culvert and small footbridge are being actively undercut by a small spring. The trail is heavily used by the public due to the relatively level terrain and short hiking distance to the cave and a waterfall, and the eroded and undercut areas pose a potential threat to public safety. At this time, the trail is in poor condition and at risk of being lost altogether.

The resources of Mossy Cave need additional protection to prevent continued damage by visitors. The cave (a rock alcove) is extremely unusual in the region, as it represents one of the only examples of hanging gardens on the entire Paunsaugunt Plateau. The availability of water allows for the presence of a wide variety of vertebrate and invertebrate faunal species, in addition to several rare plant species. Mossy Cave is a major destination for many park visitors. Currently, visitors are entering the cave and damaging the hanging gardens and geologic formations, as well as causing impacts to the cave floor. The impact of human presence inside the cave has resulted in loss of vegetation, changes in the water flow pattern, and alterations of ice formation.

The proposed project is needed to accomplish the following objectives: 1. Make the trail safe and enjoyable (rehabilitate trail); 2. Help protect cave resources; and 3. Educate the public.

SCOPING

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in an environmental assessment. Bryce Canyon National Park conducted both internal scoping with appropriate National Park Service staff and external scoping with the public and interested and affected groups and agencies.

Internal scoping was conducted by the staff of Bryce Canyon National Park and a professional of the National Park Service's Intermountain Regional Office. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined what the likely issues and impact topics would be, and identified the relationship of the proposed action to other planning efforts at the park.

A scoping letter describing the proposed action was prepared and mailed to the public, federal and state agencies, and interested groups on March 13, 2006 (see appendix A). American Indian tribes traditionally associated with the lands of Bryce Canyon National Park were also apprised of the proposed action on March 13, 2006. Scoping information was also posted on the National Park Service Planning, Environment, and Public Comment (PEPC) website (http://parkplanning.nps.gov/).

Comments were solicited during external scoping until April 13, 2006. Four comments were received from the public. Each expressed support of the proposed action. No concerns or issues were raised, and no other alternatives were proposed.

RELATIONSHIP OF THE PROPOSED ACTION TO PREVIOUS PLANNING EFFORTS

This project has been developed in a manner consistent with NPS legal mandates and management policies. The Bryce Canyon National Park General Management Plan (NPS 1981) provides broad direction for management of the park and identifies actions to improve the quality of visitor experience, as well as improve management and protection of resources. The proposed project analyzed in this document was reviewed for conformance with the General Management Plan.

IMPACT TOPICS

Issues and concerns affecting this project were identified by NPS specialists, as well as from the input of other federal, state, and local agencies. After public scoping, issues and concerns were distilled into distinct impact topics to facilitate the analysis of environmental consequences. This process allows for a standardized comparison between alternatives based on the most relevant information. Impact topics are the resources of concern that could be affected by the range of alternatives. Specific impact topics were developed to ensure that alternatives were compared on the basis of the most relevant topics. The following impact topics were identified on the basis of federal laws, regulations, orders, National Park Service 2001 Management Policies (2000), and both internal and external (public) scoping. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration. Table 1 lists all of the impact topics considered, followed by the rationale for dismissing specific topics from further consideration.

SOILS

In general, the top of the Paunsaugunt Plateau is covered with gravelly loam-type soils. These shallow, well-drained soils are derived predominately from limestone.

Soils in the immediate vicinity of the trail are unprotected by vegetation and compacted from visitor use. For the most part, soils beyond the trail itself are mostly unaffected; however, there are several areas of erosion and social trailing. While Alternative A would allow continued erosion and soil compaction, Alternative B proposes to reduce erosion and repair social trailing. Because soils would be affected by the alternatives, soils will be discussed further in this document.

VEGETATION

According to the National Park Service's 2001 Management Policies, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of plants (NPS 2000).

Under the No-Action Alternative, only routine maintenance work would continue on the trail and erosion and loss of vegetation may continue. Visitors would still have complete access to Mossy Cave and may continue to damage vegetation inside the cave. Alternative B would include trail rehabilitation and installation of a barrier near the entrance to Mossy Cave. These actions would displace, disturb or compact vegetation in the areas of construction, particularly in the area of the proposed trail reroute. The installation of the barrier would also impact the vegetation in the cave by preventing additional damage. Because of the possible effects of the two alternatives, this impact topic will be carried forward throughout this EA.

VISITOR USE AND EXPERIENCE

According to 2001 Management Policies, the enjoyment of park resources and values by people is part of the fundamental purpose of all park units (NPS 2000). The National Park Service is committed to providing appropriate, high quality opportunities for visitors to enjoy the parks, and will maintain within the parks an atmosphere that is open, inviting, and accessible to every

segment of society. Further, the National Park Service will provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks. The National Park Service 2001 Management Policies also state that scenic views and visual resources are considered highly valued associated characteristics that the National Park Service should strive to protect (NPS 2000).

The Mossy Cave Trail is heavily used by the public due to the relatively level terrain and short hiking distance to the cave and a waterfall. At this time, the trail is in poor condition and at risk of being lost altogether.

Mossy Cave (a rock alcove) is a major destination for many park visitors. Currently, visitors are entering the rock alcove and damaging the hanging gardens and geologic formations, as well as causing severe impacts to the cave floor.

The No-Action Alternative would allow the continuance of routine trail maintenance work, but would not include any major rehabilitation work. Without major rehabilitation work to correct the problems outlined in the Purpose and Need section, the trail may be lost. As a result, the No-Action Alternative could have adverse impacts on visitor use and experience. Under Alternative B, rehabilitation work would be completed and the trail would return to good condition allowing visitors to continue accessing the cave and waterfall. Alternative B also involves installing a viewing platform and fence near the entrance to Mossy Cave, which would prevent visitors from accessing the entire cave. This may have adverse impacts on some visitors. Because of the possible impacts to visitor access to the cave and waterfall, visitor use and experience will be further analyzed in this environmental assessment.

WATER RESOURCES

The project lies within Water Canyon and involves the Tropic Irrigation Ditch. The Tropic Ditch diverts water from the East Fork Sevier River to two ponds located near the town of Tropic, in Garfield County, Utah. The water is released from the East Fork Sevier River into the Tropic Ditch by means of a diversion structure. The ditch then travels across the Paunsaugunt Plateau and through Bryce Canyon National Park. While still in the park, the ditch travels down Water Canyon into Tropic Canyon. The ditch then crosses under Highway 12 (near the Mossy Cave Trail parking area) and approximately one mile down stream it leaves the park. It continues down Tropic Canyon to the two ponds within the Tropic Valley where it is used to irrigate land in and around Tropic. The first pond lies south of Highway 12 approximately 1.5 miles downstream from where the ditch crosses under the highway (BOR 2006).

For much of the year, minimal water flows in Water Canyon. The water that is present is from small springs in the area and in Mossy Cave. From approximately April 15 through October 15 every year, the water is diverted from the Sevier River and the water level in the wash near the trail increases dramatically.

The No-Action Alternative allows areas along the trail to continue to erode sending sediment and debris into the wash. Alternative B proposes to greatly reduce this erosion. In order to complete Alternative B, large equipment would be used in the wash itself, which may impact the water resources. Therefore, water resources will continue as an impact topic in this EA.

IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

The following resources would not be affected by either of the alternatives or do not exist in the area, so will not be discussed further:

CULTURAL RESOURCES

The 1966 National Historic Preservation Act as amended (NHPA, 16 USC 470 et seq.), the 1916 NPS Organic Act, and NPS planning and cultural resource guidelines call for the consideration and protection of historic properties (the term “historic properties” refers to all cultural resources, including archeological resources, cultural landscapes, ethnographic resources, and historic resources eligible for or listed on the National Register of Historic Places). The evaluation of potential impacts of proposed actions on historic properties is required by National Environmental Policy Act (NEPA) and NHPA, and must follow the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) for sites where human remains or burials may be present.

Archeological surveys, meeting the Secretary of the Interior’s Standards for the Treatment of Archeological Properties, were conducted in the area of potential effect (Dominguez, et al. 1992), and resulted in a negative finding. If previously unknown archeological resources are discovered during project activities, work would be stopped in the area of the discovery, and the park would consult with the Utah State Historic Preservation Officer (SHPO) and, as appropriate, the Advisory Council on Historic Preservation. If appropriate, provisions of the NAGPRA Act of 1990 would be implemented.

No ethnographic research has been conducted to determine ethnographic resources; however, culturally affiliated groups received scoping letters and notification of the EA. The park did not receive any information from tribes indicating that there are any ethnographic resources in the project area.

There are no historic structures or cultural landscapes within the project area. The trail was surveyed for inclusion on the National Register of Historic Places in 1994, but was deemed ineligible (see Appendix B). While the trail was first proposed in 1929, later historical documents relating specifically to trails do not mention the Mossy Cave Trail and it is not included in park roads and trails documents as late as 1960. The current trail is believed to represent a modern resource. It was also determined that the trail is not prominent in NPS administrative records, is not a part of the Bryce Canyon National Park Master Plan, and is not a historically significant resource (NPS 1994).

After applying the Advisory Council on Historic Preservation’s criteria of adverse effects (36 CFR Part 800.5, Assessment of Adverse Effects), the National Park Service concludes that implementation of either alternative described in this document would result in a “no historic properties affected” determination. This is due to the fact that no archeological resources, historic resources, ethnographic resources or cultural landscapes are known to exist in the project area. Concurrence with this determination will be requested from the Utah SHPO during the public review process.

AIR QUALITY

The 1963 Clean Air Act (CAA), as amended (42 U.S.C. 7401 et seq.), requires federal land managers to protect park air quality, while the 2001 NPS Management Policies addresses the need to analyze air quality during park planning.

Bryce Canyon National Park is designated a Class 1 area under the Clean Air Act. The park’s air quality is among the best in the nation with occasional periods of regional haze, forest fire smoke, or widely dispersed industrial pollution.

Under the No-Action Alternative, local air quality would not be affected as no new sources of air pollution would be created. Under Alternative B, construction activities such as hauling materials and operating equipment could result in temporary increases of vehicle exhaust, emissions, and fugitive dust in the general project area. Any exhaust, emissions, and fugitive dust generated from construction activities would be temporary and localized, and would likely dissipate rapidly.

Overall, the project could result in a negligible degradation of local air quality, but such effects would be temporary, lasting only as long as project work. The Class I air quality designation for Bryce Canyon National Park would not be affected by the proposal. Therefore, air quality has been dismissed as an impact topic.

NIGHT SKY OR LIGHTSCAPES

The NPS recognizes that a clear view of the night sky is an important value to park visitors. Artificial light pollution can affect opportunities for night sky viewing and enjoyment. If the Preferred Alternative is selected, there would be no adverse effects on night sky viewing, because all project activities would occur during daytime hours. Under Alternative A, there would be no rehabilitation activities and no potential for adverse effects on the night sky. Therefore, impacts to lightscapes would not be expected.

SOUNDSCAPES

The term “soundscapes” refers to the ambient or natural background sound of a given area. Analysis of potential impacts to natural soundscapes is required by NPS 2001 Management Policies. The proposed project activities would occur in an area with a great deal of vehicle traffic nearby, as the trailhead is on Highway 12 and the trail is approximately 0.5 mile in length. Neither the Preferred Alternative nor the No-Action Alternative would affect the long- term soundscape of the area.

PRIME AND UNIQUE FARMLANDS

In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies must assess the effects of their actions on farmland soils classified by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) as prime or unique. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to NRCS, none of the soils in the project area are classified as prime and unique farmlands. Therefore, the topic of prime and unique farmlands was dismissed as an impact topic in this document.

WETLANDS

For regulatory purposes under the Clean Water Act, the term wetlands means "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas."

Executive Order 11990 Protection of Wetlands requires federal agencies to avoid, where possible, adversely impacting wetlands. Further, Section 404 of the Clean Water Act authorizes the U.S. Army Corps of Engineers to prohibit or regulate, through a permitting process, discharge of dredged or fill material or excavation within waters of the United States. National Park Service policies for wetlands, as stated in 2001 Management Policies and Director’s Order 77-1 Wetlands Protection, strive to prevent the loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. In accordance with DO 77-1 Wetlands Protection, proposed actions that have the potential to adversely impact wetlands must be addressed in a Statement of Findings for wetlands.

No wetlands are located in the project area. Therefore, a Statement of Findings for wetlands will not be prepared, and the impact topic of wetlands has been dismissed.

FLOODPLAINS

Executive Order 11988 Floodplain Management requires all federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. The National Park Service under 2001 Management Policies and Director's Order 77-2 Floodplain Management will strive to preserve floodplain values and minimize hazardous floodplain conditions. According to Director's Order 77-2 Floodplain Management, certain construction within a 100-year floodplain requires preparation of a Statement of Findings for floodplains.

According to Procedural Manual 77-2: Floodplain Management, this procedure does not apply to certain park functions that are often located near water for the enjoyment of visitors but require little physical development and do not involve overnight occupation. Examples include:

> Picnic facilities, scenic overlooks, foot trails, and small associated daytime parking facilities in non-high hazard areas, provided that the impacts of these facilities on floodplain values are minimized;
>
> Isolated backcountry sites, natural or undeveloped sites along trails or roads, survey and study sites, or other similar activities; and
>
> Emergency actions essential to protecting property and public health, provided that emergency actions are limited to the minimum required and that all possible steps are taken to mitigate the short and long term adverse impacts of these actions on floodplain values.

This project involves a foot trail in a non-high hazard area, which is an excepted action as stated above. Either Alternative A or B would have minimal impacts on floodplain values (less than minor). So, while parts of the project area are located within a 100-year floodplain, a Statement of Findings for floodplains will not be prepared and this topic has been dismissed from further discussion.

WILDERNESS AND WILD AND SCENIC RIVERS

These are congressionally-designated areas and do not exist in the area of concern of this environmental assessment. Proposed wilderness and rivers suitable for Wild and Scenic River designation both occur in the park, but these would not be affected under either alternative.

WILDLIFE

According to the National Park Service's 2001 Management Policies, the National Park Service strives to maintain all components and processes of naturally evolving park unit ecosystems, including the natural abundance, diversity, and ecological integrity of animals (NPS 2000). Wildlife commonly found in the park include mule deer, black bear, mountain lions, ringtail cats, chipmunks, marmots, ground squirrels, bats, mice, and over 150 species of birds, including the Western flycatcher, and violet green swallow. There are also 11 species of reptiles and 4 species of amphibians, and there may be over 1,000 insect species. Many of these species listed above occasionally use the Mossy Cave area.

The project area is in a moderately used visitor use area near a highway. Visitors use the trail year-round and throughout daylight hours. Wildlife habitat would be little changed by either alternative. The No-Action Alternative would maintain the status-quo, which currently has little impact on wildlife or habitat. Alternative B would involve rerouting a section of trail and installing a viewing platform near the cave entrance, but neither would greatly alter wildlife habitat. During construction, noise would increase and may disturb wildlife in the general area. Construction-related noise would be temporary, and existing sound conditions would resume following construction activities. Therefore, the temporary noise from construction would have a negligible to minor adverse effect on wildlife.

Because the effects to wildlife and wildlife habitat from the proposed project are minor or less in degree, this topic has been dismissed from further analysis in this document.

SPECIAL STATUS SPECIES

The Endangered Species Act of 1973 requires examination of impacts on all federally-listed threatened, endangered, and candidate species. Section 7 of the Endangered Species Act requires all federal agencies to consult with the U.S. Fish and Wildlife Service (or designated representative) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitats. In addition, the 2001 Management Policies and Director's Order 77 Natural Resources Management Guidelines require the National Park Service to examine the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species (NPS 2000). For the purposes of this analysis, the U.S. Fish and Wildlife Service and the Utah Division of Wildlife were contacted with regards to federally- and state-listed species to determine those species that could potentially occur on or near the project area.

A letter from the U.S. Fish and Wildlife Service dated January 22, 2004 (see Appendix C) indicated that there are no records of threatened or endangered species in the project area (USFWS, January 22, 2004).

Neither alternative is likely to have impacts to threatened or endangered species as a result of stabilization and repair activities during the proposed period, and no documented threatened or endangered species have been observed in this area (see Appendix D), so this topic is not included for analysis. If adverse impacts to a listed species are identified, consultation with the USFWS would be initiated.

ENVIRONMENTAL JUSTICE

Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. The proposed action would not have disproportionate health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance (1998). Therefore, environmental justice was dismissed as an impact topic in this document.

INDIAN TRUST LANDS

No lands comprising Bryce Canyon National Park are held in trust by the Secretary of the Interior solely for the benefit of American Indians due to their status as American Indians; therefore this was dismissed from further consideration for this project.

SOCIOECONOMIC ENVIRONMENT

The proposed action would neither change local and regional land use nor impact local businesses or other agencies. Therefore, socioeconomic environment will not be addressed as an impact topic in this document.

URBAN QUALITY AND DESIGN OF THE BUILT ENVIRONMENT

Consideration of this topic is required by 40 CFR 1502.16. Under either alternative, urban area quality is not an issue.

ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

The Preferred Alternative would not result in an increase in inherent energy needs. Project activities would occur during daylight hours. The project would not have a significant effect on energy availability or costs. Under either alternative, no additional electricity would be required and would therefore not affect energy availability or costs. Therefore this topic was dismissed from further consideration for this project.

TABLE 1: IMPACT TOPICS RETAINED OR DISMISSED FROM FURTHER STUDY

Impact Topic	Retain or Dismiss	Relevant Regulations or Policies
Cultural Resources		
Archaeological Resources	Dismiss	*National Park Service Organic Act; National Historic Preservation Act of 1966, as amended; Executive Order 11593: Protection and Enhancement of the Cultural Environment (1971), Archeological and Historic Preservation Act of 1974, as amended; Archeological Resources Protection Act of 1979, as amended; the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; Programmatic Memorandum of Agreement (MOA) Among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); Protection of Archeological Resources, 43 CFR 7; Protection of Historic Properties, 36 CFR 800; NPS Management Policies (2001); Cultural Resources Management Guidelines, DO-28 (1998)*
Historic Structures and Cultural Landscapes	Dismiss	*National Park Service Organic Act; National Historic Preservation Act of 1966, as amended; Executive Order 11593: Protection and Enhancement of the Cultural Environment (1971); Archeological and Historic Preservation Act of 1974, as amended; the Secretary of the Interior's Standards for the Treatment of Historic Properties; Programmatic MOA among the NPS, Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers (1995); NPS Management Policies (2001); Protection of Historic Properties, 36 CFR 800; the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes (1996); Cultural Resources Management Guidelines, DO-28 (1998)*
Ethnographic Resources	Dismiss	*The Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation; NPS Management Policies (2001); Protection of Historic Properties, 36 CFR 800; Cultural Resources Management Guidelines, DO-28 (1998)*
Museum Collections	Dismiss	*National Historic Preservation Act of 1966, as amended; National Environmental Policy Act of 1969, as amended; Museum Properties Management Act of 1955; NPS Management Policies (2001); Protection of Historic Properties, 36 CFR 800; Cultural Resources Management Guidelines, DO-28 (1998)*
Natural Resources		
Air quality	Dismiss	*NPS Organic Act; Federal Clean Air Act (CAA); CAA Amendments of 1990 (CAAA); NPS Management Policies 2001*
Natural Lightscapes	Dismiss	*NPS Management Policies 2001*
Natural Soundscapes/Noise	Dismiss	*NPS Organic Act; NPS Management Policies 2001, Section 4.9 Soundscape Management*
Prime and unique agricultural lands	Dismiss	*Council on Environmental Quality 1980 memorandum on prime and unique farmlands*
Soils	**Retain**	*NPS Management Policies 2001; NPS Natural Resource Management Guidelines for Soil Resources Management*
Vegetation	**Retain**	*NPS Organic Act; NPS Management Policies 2001; DO-77, Natural Resource Protection; Executive Order 13112,, Invasive Species*
Water quality and hydrology	**Retain**	*Clean Water Act; Executive Order 12088; NPS Management Policies 2001*
Wetlands	Dismiss	*Executive Order 11988; Clean Water Act; NPS Management Policies 2001*
Floodplains	Dismiss	*Executive Order 11990; Clean Water Act; NPS Management Policies 2001*
Wild & Scenic Rivers	Dismiss	*Wild and Scenic Rivers Act*
Wilderness	Dismiss	*Director's Order 41; NPS Management Policies 2001; Wilderness Act*

Wildlife, including Threatened, Endangered and Special Status Species	Dismiss	*Endangered Species Act; NPS Management Policies 2001; National Environmental Policy Act; Executive Order 13112, Invasive Species*
Social Resources		
Environmental justice	Dismiss	*Executive Order 12898*
Indian trust resources	Dismiss	*Department of the Interior Secretarial Order No. 3206, Interior Departmental Manual Part 512, Chapter 2*
Park operations	Dismiss	*NPS Management Policies 2001*
Urban Quality and Design of the Built Environment	Dismiss	*40 CFR 1502.16*
Socioeconomic environment	Dismiss	*40 CFR 1500 Regulations for Implementing NEPA*
Visitor use and experience (including public health and safety)	**Retain**	*NPS Organic Act; NPS Management Policies 2001*
Energy Requirements and Conservation Potential	Dismiss	*40 CFR 1502.16*

ALTERNATIVES CONSIDERED

ALTERNATIVE A – NO-ACTION ALTERNATIVE

The No-Action Alternative describes the action of continuing the present management operation and condition; it does not imply or direct discontinuing the present action or removing existing uses, developments, or facilities. The No-Action Alternative provides a basis for comparing the management direction and environmental consequences of the proposed action and must always be considered in every EA. Should the No-Action Alternative be selected, NPS would respond to future needs and conditions associated with the Mossy Cave Trail without major actions or changes in course.

Under the No-Action Alternative, activities that currently occur at the trail would continue as necessary. Cave resources would continue to deteriorate with continued public access because no viewing platform or fence would be installed. Bridge abutments would be reinforced with small, hand-picked rocks rather than large boulders, leaving them more susceptible to continued undercutting. The eroded trail tread would be repaired to the greatest extent possible under routine maintenance, but would remain narrow as large boulders would not be moved to reinforce and expand it. The trail would not be rerouted around the undercut culvert, although that area is too dangerous for continued use and another solution would have to be sought. Interpretive waysides would not be installed, leaving the public uninformed about the areas resources. Overall, the trail would remain in poor condition, with minor repairs and rehabilitation occurring as necessary.

ALTERNATIVE B – PREFERRED ALTERNATIVE

The Preferred Alternative is the agency's (NPS) preferred alternative and defines the rationale for the action in terms of resource protection and management, visitor and operational use, costs, and other applicable factors. All actions described in the Preferred Alternative are consistent with the approved (1981) general management plan and related park documents.

Under the Preferred Alternative, large boulders would be moved from within the wash bed to support and stabilize a badly eroded section of trail. Large boulders would also be moved to reinforce the first abutment on the second bridge, which is currently being undercut. Additional boulders may be moved along the southwest side of the wash just above the second bridge to help stabilize the stream bank and reduce erosion and future loss of trail. The movement of boulders from the wash bed to the trail and bridge abutment would require the use of machinery such as an excavator and a small cat or small dozer (approximate footprint 11-feet wide by 15-feet long). The equipment would be driven up the wash bed and would pick up large boulders and place them along the trail or push them into place to prevent the trail from eroding during rain events. Boulders would also be moved from one portion of the wash bed to the second bridge abutment to prevent additional undercutting. Small rocks would be hand-picked and placed in between the boulders to further stabilize the abutment. The equipment would continue up the wash to stabilize that area as well. Boulders would be moved to the SW side of the wash where the bank is beginning to erode.

This alternative would also involve rerouting a section of trail around a badly undercut culvert that is quickly becoming a public safety hazard. The reroute would involve relocating approximately 125 meters of trail to an area showing evidence of previous disturbance, such as a trail (Figure 3). In addition, the culvert would be removed in order to allow the spring to flow naturally.

Another part of this alternative would be to construct a viewing platform approximately 12 feet by 10 feet to reduce damage to cave resources. This would require the use of a small piece of

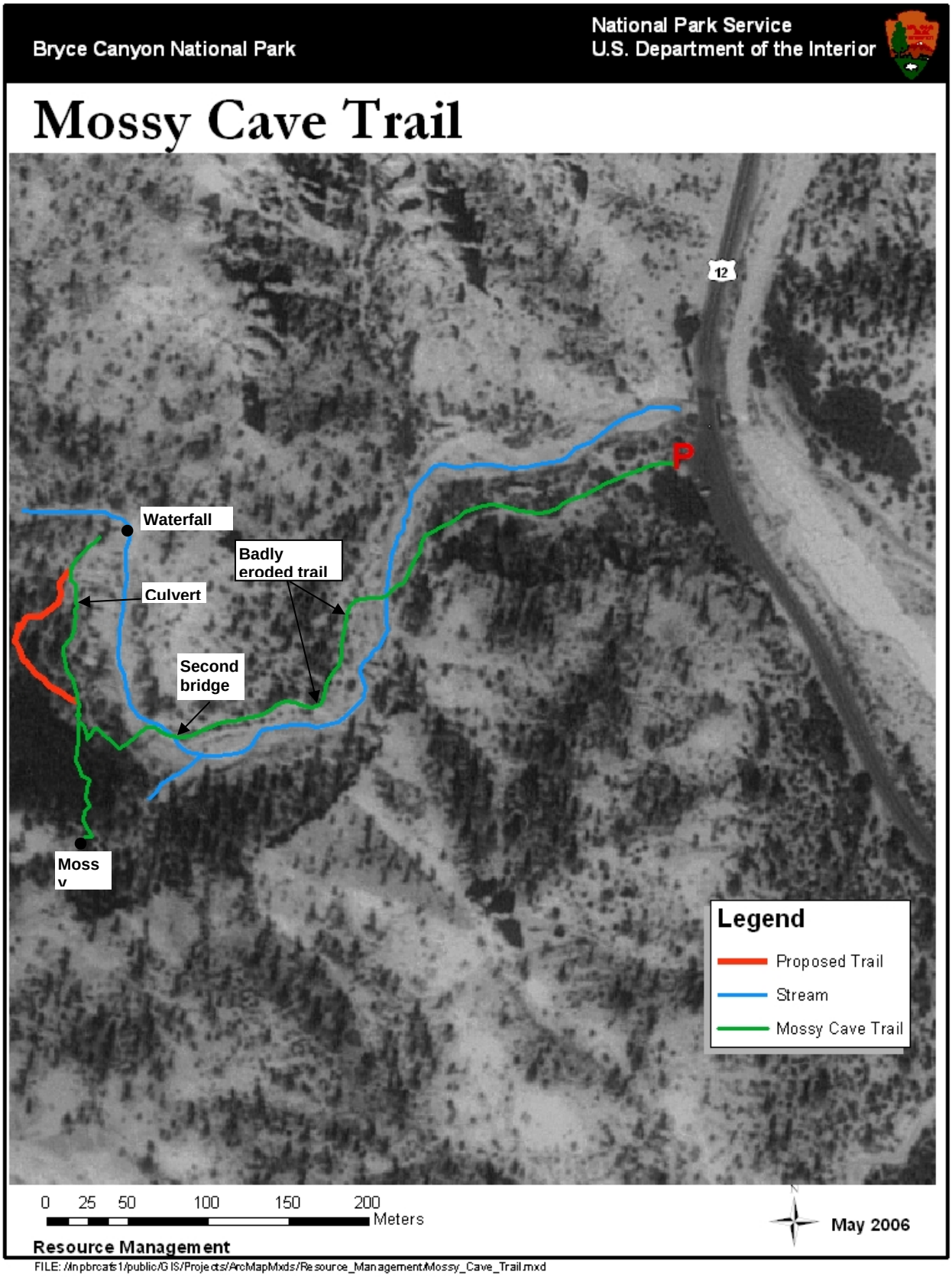
machinery that can travel up the trail itself without causing additional damage to the trail. All materials would be brought in through the use of this piece of equipment or carried by hand.

The last part of Alternative B would be to develop and install wayside exhibits explaining the area and its resources. These exhibits would be placed along the trail near areas of interest.

Any areas disturbed during completion of this project would be rehabilitated and revegetated with native species.

This project would result in a visitor use trail in good condition that could withstand typical rain events and remain safe and available to the public for many years.

FIGURE 3: MOSSY CAVE TRAIL



ALTERNATIVES CONSIDERED BUT DISMISSED

Another alternative considered was to close the trail. This alternative was dismissed as this is the only front country trail in the park that has water access for the public most of the year. It is also the only trail that leads to a cave. Mossy Cave is extremely unusual in the region, as it represents one of the only examples of hanging gardens on the entire Paunsaugunt Plateau. Mossy Cave (a rock alcove) is a major destination for many park visitors. The trail is heavily used by the public due to the relatively level terrain and short hiking distance to the cave and a waterfall and location on Scenic Byway 12. Closing the trail to the public is an unreasonable solution; therefore, this alternative was dismissed from further analysis.

The park also considered the alternative of eliminating all current maintenance on the trail and allowing it to degrade and fail completely. Visitors would be allowed to access the area up the drainage, which would increase the likelihood of social trailing. Additional safety concerns would exist due to erosion and trail instability. Park assets would also be at risk of loss. Undercutting on one bridge abutment has already begun and would be allowed to continue under this alternative. This alternative was dismissed due to the increased safety concerns, possible loss of NPS assets, and resource damage that occurs due to social trailing (erosion, loss of vegetation, and damage to cave resources).

MITIGATION MEASURES

To minimize negative impacts to water quality, all work within the wash would be conducted after October 15, 2006 and before April 15, 2007. From April 15 through October 15, the water flow is at a much higher level due to the irrigation water being transported through Water Canyon by the Tropic East Fork Irrigation Company. By using the equipment and moving boulders in the wash bed during times of low water flow, impacts to water quality would be decreased.

Every effort would be made to keep the trail open to the public during construction, thereby minimizing impacts to visitor use and experience.

All disturbed areas would be restored as nearly as possible to pre-construction conditions shortly after construction activities are completed. Revegetation plantings would use native species from genetic stocks originating in the park. Revegetation efforts would be to reconstruct the natural spacing, abundance, and diversity of native plant species. The principal goal is to avoid interfering with natural processes.

In many areas soils and vegetation are already impacted by various human and natural activities. Construction would take advantage of these previously disturbed areas wherever possible. Soils within the project construction limits would be compacted and trampled by the presence of construction equipment and workers. Soils would be susceptible to erosion until revegetation takes place. Vegetation impacts and potential compaction and erosion of bare soils would be minimized by conserving topsoil in windrows. The use of conserved topsoil would help preserve micro-organisms and seeds of native plants. The topsoil would be respread in as near as original location as possible, and supplemented with scarification, mulching, seeding, and/or planting with species native to the immediate area. This would reduce construction scars and erosion.

Should construction unearth previously undiscovered archeological resources, work would be stopped in the area of any discovery and the park would consult with the state historic preservation officer and the Advisory Council on Historic Preservation, as necessary, according to §36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.

Temporary impacts associated with construction would occur, such as soil and vegetation disturbance and the possibility of soil erosion. In an effort to avoid introduction of exotic plant species, no hay bales would be used. Hay often contains seed of undesirable or harmful alien plant species. Therefore, on a case-by-case basis the following materials may be used for any erosion control dams that may be necessary: rice straw, straws determined by NPS to be weed-free, cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales. Standard erosion control measures such as silt fences and/or sand bags would also be used to minimize any potential soil erosion.

Construction zones would be identified, which would confine activity to the minimum area required for construction.

Silt fencing fabric would be inspected weekly or after every major storm. Accumulated sediments would be removed when the fabric is estimated to be approximately 75% full. Silt removal would be accomplished in such a way as to avoid introduction into any wetlands or flowing water bodies.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The Council on Environmental Quality defines the Environmentally Preferred Alternative as "…the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act's §101." Section 101 of the National Environmental Policy Act states that "… it is the continuing responsibility of the Federal Government to …

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

Alternative A would provide for continued visitor use and resource management of the trail to accommodate hiking. Under this alternative, park resources would continue to be protected to some extent while providing opportunities for the public to see some of the natural resources found in this section of the park. This alternative, therefore, strives to and meets policies 1-6 to varying degrees. However, this alternative does not fully meet policies 2 and 4. The trail would remain unstable in sections and the undercut culvert would remain, which could be possible hazards to public safety. Cave resources would still be vulnerable to negative impacts as it would be fully available for the public to access.

Alternative B is the Environmentally Preferred Alternative. Alternative B strives to and meets policies 1-6 to the extent of Alternative A, and would more fully meet policy 2 by assuring a safer and more aesthetically pleasing surrounding. The unstable sections of trail would be stabilized and reinforced with large boulders and eroded areas would be revegetated. It would also more fully meet policy 4 by installing a viewing platform near the cave entrance to better protect cave resources and allow them to recover to healthy conditions.

SUMMARIES

TABLE 2: METHODS EACH ALTERNATIVE USES TO ENSURE EACH OBJECTIVE IS MET

Objective	Alternative A: No-Action	Alternative B: Trail Rehabilitation and Protection of Cave Resources
1. Make trail safe and enjoyable (rehabilitate trail)	Repairs trail tread. Reinforces undercut bridge abutment with rocks. Size of rocks limited to those that can be hand-picked.	Repairs and reinforces eroded trail tread, ensuring a stable and wide path. Reinforces undercut bridge abutment with rocks and boulders. Large boulders would be placed, along with hand-picked rocks to deter continued erosion. Prevent loss of trail by placement of boulders on one side of wash in order to help stabilize stream bank.
2. Help protect cave resources	Nothing is done to protect cave resources.	Installs a viewing platform to limit public access to cave and its resources.
3. Educate public about area and resources	Keeps outdated and weathered waysides along trail. Some education occurs.	Develop and install new wayside exhibits explaining the area and its resources.
Alternatives Meet Objectives?	Alternative meets objectives 1 and 3 to some extent, but does not meet objective 2 at all. The trail is made safer and more enjoyable by repairing the trail tread, but the tread would still remain narrow in places without the use of boulders to increase width. The public would be educated to some extent as old wayside exhibits would remain in place; however, the exhibits are outdated.	Alternative fully meets all three objectives. The trail would be made safe and enjoyable by ensuring a stable and wide tread along the length of the trail. Cave resources would be protected by preventing visitors from fully accessing the cave and damaging its resources. The public would be educated with new and up-to-date wayside exhibits explaining the area, the cave, and its resources.

TABLE 3: SUMMARY COMPARISON OF IMPACTS

Impact Topic	No-Action Alternative	Preferred Alternative
Soils	There would be no change to existing conditions. Existing site-specific minor, long-term adverse impacts to soils would continue, due to erosion and undercutting of the trail and undercutting of the bridge abutment.	This alternative would disturb and compact soil during construction, resulting in site-specific adverse, negligible to minor, short-term impacts. This alternative would also have minor beneficial and long-term impacts locally to soils by reducing erosion. Overall, the Preferred Alternative would have negligible to minor long-term beneficial impacts to soils.
Vegetation	Minor, adverse, long-term impacts to cave vegetation would continue in Alternative A. Vegetation outside the cave and along the trail has been minimally impacted. These impacts are negligible and adverse, and would continue under this alternative. Overall, regional impacts to vegetation due to the No-Action Alternative are negligible to minor, adverse, and long-term.	Alternative B would have negligible and adverse impacts to vegetation during project completion as some trampling and removal of individual plants would occur as part of the trail reroute, platform construction, and trail stabilization. Disturbed areas would be revegetated and rehabilitated following construction; therefore, removal and/or disturbance of vegetation in the project area is expected to result in no or negligible adverse impacts to vegetation. In the long-term, the project would have negligible to minor benefits to the area's vegetation as erosion and undercutting would be greatly reduced. Vegetation in Mossy Cave is currently being impacted when visitors enter the cave and trample or remove it, but construction of a viewing platform would allow the vegetation to recover and remain protected. Overall, the Preferred Alternative would have long-term negligible to minor benefits to vegetation.
Visitor Use and Experience	Visitors currently enjoy this trail year-round, and especially enjoy accessing the water and cave during the warm summer months. In this alternative, visitors using the trail would continue to be exposed to possible safety hazards due to narrow trail tread and undercutting of a culvert and small foot bridge. The trail would continue to deteriorate, resulting in negligible to minor adverse impacts on visitor use and experience. In the event that the culvert and bridge were lost due to severe undercutting or deemed unsafe for use, the trail may have to be closed. As this is the only front country trail in the park with water access, there would be adverse minor to moderate impacts in the long-term.	Under Alternative B, rehabilitation work would be completed and the trail would return to good condition allowing visitors to continue accessing the cave and waterfall; therefore there would be long-term, beneficial minor to moderate impacts to visitor use and experience. Visitor safety would be enhanced by eliminating narrow trail tread and rerouting the trail around a badly undercut section. Alternative B also involves installing a viewing platform and fence near the entrance to Mossy Cave, which would prevent visitors from accessing the entire cave. This may

Impact Topic	No-Action Alternative	Preferred Alternative
	For those visitors that enjoy entering the cave and seeing the resources up close, Alternative A would have minor to moderate beneficial impacts in the long-term due to continued full access to the cave. Unfortunately, the resources are being damaged by some of this visitor traffic; therefore, Alternative A would have minor to moderate adverse impacts to visitor use and experience due to damaged resources for those visitors who particularly enjoy the resources themselves.	have minor to moderate, long-term adverse impacts on some visitors; however, ensuring that the cave and its resources are protected for future generations to enjoy, would result in long-term, minor to moderate beneficial impacts. During the rehabilitation work and viewing platform installation, visitors would be subject to noise and minor inconveniences. These impacts would be adverse, but short-term and negligible to minor in intensity. Overall, Alternative B would result in beneficial, minor to moderate and long-term impacts to visitor use and experience.
Water Resources	Alternative A would have long-term negligible to minor impacts on water quality due to erosion and impacts would be of the higher intensity during storm or run-off events. Areas that are already badly eroded would continue to deteriorate under the No-Action Alternative, impacting local water quality.	Alternative B would have minor to moderate adverse impacts on local water quality in the short-term during construction. Mitigation measures would reduce impacts to negligible to minor. This alternative would also have long-term, negligible to minor and beneficial impacts due to the reduction in erosion.

ENVIRONMENTAL CONSEQUENCES

METHODOLOGY

Potential impacts are described in terms of type (are the effects beneficial or adverse?), context (are the effects site-specific, local, or even regional?), duration (are the effects short-term, lasting less than one year, or long-term, lasting more than one year?), timing (is the project seasonally timed to avoid adverse effects), and intensity (are the effects negligible, minor, moderate, or major). Because definitions of intensity (negligible, minor, moderate, or major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this environmental assessment/assessment of effect.

In addition, National Park Service's Management Policies, 2001 require analysis of potential effects to determine whether or not actions would impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values. However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within park, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values. An impact to any park resource or value may constitute an impairment, but an impact would be more likely to constitute an impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. A determination on impairment is made in the *Environmental Consequences* section for natural and cultural resource topics.

CUMULATIVE IMPACT SCENARIO

The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental Policy Act of 1969 (42 USC 4321 *et seq*.), require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for both the No-Action and Preferred alternatives.

Cumulative impacts were determined by combining the impacts of the alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at Bryce Canyon National Park and, if applicable, the surrounding region. No reasonably foreseeable future development by the NPS

is anticipated for the Mossy Cave Trail or areas nearby; however, the park did approve a Fire Management Plan (FMP) in 2005. This plan allows for a range of fire management options within the park. In the Mossy Cave area the plan allows for wildland fire use fires (allow natural fires to burn within defined prescriptions), prescribed fires, wildland fire suppression, and mechanical treatment of fuels as appropriate. Non-NPS projects that will be included in the cumulative impact scenario include the following:

In 2002, the town of Tropic repaired their water collection system located at the Dr. Goode Spring, which is about 350 meters southeast (and downstream) from the Mossy Cave Trailhead in the Tropic Wash. The system includes a pipe within the wash and other structures related to the spring. The town maintains this wash, which requires annual maintenance and occasional larger scale work.

Currently, the Tropic and East Fork Irrigation Company is replacing approximately 5.5 miles of existing irrigation ditch with approximately 4 miles of pipe. The project begins across Highway 12 from the Mossy Cave Trail and continues east and exits the park after approximately one mile.

Garkane Power is proposing to upgrade the powerline between the Town of Tropic and Hatch. The compliance for this process is currently underway and may include going through Bryce Canyon following the current powerline or an alternative route not yet determined.

It was discovered in 2005 that the Tropic Wash is eroding to the road shoulder of Highway 12. The Utah Department of Transportation (DOT) has proposed to place stabilizing structures in the three areas of greatest concern. This may involve fill material, construction of stream barbs, and other structures. Within the park the focus will be within a quarter mile of the park's eastern boundary. It is anticipated that the work for this project would occur in 2006 once the compliance is completed.

SOILS

AFFECTED ENVIRONMENT

The soils in the wash bottom and first fluvial surface (or bench) above the channel are well drained and formed in mixed alluvium derived from sandstone and limestone. The soils in the Panguitch Area, Utah, parts of Garfield, Iron, Kane, and Paiute counties are identified as Badland-Rock outcrop-Paunsaugunt complex, 2-20% slopes. The soils included eroded side slopes and mesa tops along the breaks of the Paunsaugunt Plateau and along the drainageways that have dissected the plateau. Slopes are short and complex. The unit is 30% badland, 30% rock outcrop, 20% Paunsaugunt gravelly loam, 2-20 % slopes and 20% other soils. Paunsaugunt soil is shallow and somewhat excessively drained. It formed in residuum derived dominantly from limestone (USDA 1990).

Analyses of the potential intensity of impacts to soils were derived from the available information regarding natural systems and soils of Bryce Canyon National Park and the park staff's past observations of the effects of both visitor use and construction upon soils. The thresholds of change for the intensity of impacts to soils are defined as follows:

METHODOLOGY

Negligible: the impact is at the lowest levels of detection - barely measurable with no perceptible effects.

Minor: the impact is slight but detectable, with few perceptible effects, and localized in area.

Moderate: the impact is readily apparent and measurable.

Major: the impact is severely adverse or exceptionally beneficial.

REGULATIONS AND POLICIES

Current laws and policies require that the following conditions be achieved in the park:

Desired Condition	Source
The NPS is directed by the Organic Act to conserve the scenery and the natural objects unimpaired for future generations. The NPS Management Policies 2001 define the general principles for managing biological resources as maintaining all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity and ecological integrity of plant communities.	NPS Organic Act NPS Management Policies 2001

IMPACTS OF ALTERNATIVE A: NO-ACTION

Impact Analysis

There would be no project-related ground disturbance with the potential to impact these resources. There would be no change to existing conditions. Existing minor, long-term adverse impacts to soils would continue, due to site-specific erosion and undercutting of the trail and undercutting of the bridge abutment.

Cumulative Impacts

Past projects impacting soils in the area include the Dr. Goode Spring box repair and the Tropic Ditch pipeline. Both of these projects had negligible or less adverse impacts to soils in the short-term (during the construction period) and no long-term impacts. The park's Fire Management Plan may also contribute to cumulative impacts. Impacts to soils from the FMP would range from negligible to minor and adverse in the short term, to moderate and beneficial in the long-term. Alternative A would contribute minor, long-term adverse impacts due to continued erosion. Overall cumulative impacts would be negligible, long-term and adverse.

Conclusion

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Bryce Canyon National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's vegetation resources or values.

IMPACTS OF ALTERNATIVE B: TRAIL REHABILITATION AND PROTECTION OF CAVE RESOURCES

Impact Analysis

This alternative would have impacts on the soils of the wash and trail area. The heavy equipment traffic in the wash bottom would disturb and compact the soil. Soil would also be disturbed during the installation of the viewing platform near the entrance to Mossy Cave. These disturbances and compaction would be negligible to minor and short-term due to the rocky and poorly-formed nature of these soils. These impacts would be very site-specific and limited to the construction areas.

This alternative would also have minor beneficial and long-term impacts to soils by reducing erosion. These impacts would be more localized over the entire project area as erosion would be prevented from occurring in the future. Badly eroded areas of the trail would be repaired and reinforced with large boulders to prevent similar erosion from occurring in the future. Boulders

would also be placed at the first abutment on the second bridge to repair damage and prevent additional erosion.

Overall, the Preferred Alternative would have localized, negligible to minor, long-term beneficial impacts to soils.

Cumulative Impacts

Cumulative impacts from past projects and the FMP would be the same as for Alternative A. The Preferred Alternative would contribute negligible to minor long-term beneficial impacts to soils, resulting in overall cumulative impacts of long-term beneficial impacts of negligible intensity.

Conclusion

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Bryce Canyon National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's vegetation resources or values.

VEGETATION

AFFECTED ENVIRONMENT

The existing vegetation in the project area primarily consists of trees and shrubs. Tree species include: common juniper (*Juniperus communis*), Gambel oak (*Quercus gambelii*), water birch (*Betula occidentalis*), Ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga menziesii*). Shrubs include: serviceberry (*Amelanchier utahensis*), creeping barberry (*Mahonia repens*), skunkbush (*Rhus aromatica ssp. Trilobata*), golden currant (*Ribes aureum*), Greenleaf manzanita (*Arctostaphylos patula*), Wood's rose (*Rosa woodsii*), and willow species (*Salix spp*.). Various grasses (*Poaceae sp.*) and forbs such as slender bog orchid (*Habenaria sparsiflora*) and stellate smilacina (*Smilacina stellata*) were also in the area Vegetation in the cave itself included nonvascular algae and various undesignated mosses (NPS 2006). The wash bottom is largely unvegetated with widely scattered forbs and grasses.

METHODOLOGY

Analyses of the potential intensity of impacts to vegetation were first determined by identifying the area that could be affected. Interdisciplinary specialists defined the affected area as the Mossy Cave Trail and the lands immediately adjacent to the trail. The analysis of impacts on vegetation was based on the amount/location of direct disturbance/removal of vegetation to complete the alternatives. It was also based on the potential for the introduction of non-native species. The impact thresholds are:

Negligible: No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. The effects would be short-term and on a small scale.

Minor: Some individual native plants would be affected, along with a relatively minor portion of that species' population. Mitigation to offset adverse effects could be required and would be effective.

Moderate: Some individual native plants would be affected, along with a sizeable segment of the species' population in the long-term and over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful.

Major: There would be a considerable long-term effect on native plant populations and would affect a relatively large area in and outside of the park. Mitigation measures to offset the adverse effects would be required and extensive; success of the mitigation measures would not be assured.

Duration: Short-term - Recovers in less than 3 years.

Long-term - Takes more than 3 years to recover.

REGULATIONS AND POLICIES

Current laws and policies require that the following conditions be achieved in the park:

Desired Condition	Source
The NPS is directed by the Organic Act to conserve the scenery and the natural objects unimpaired for future generations. The NPS Management Policies 2001 define the general principles for managing biological resources as maintaining all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity and ecological integrity of plant communities.	NPS Organic Act NPS Management Policies 2001
When NPS management actions cause native vegetation to be removed, then the NPS will seek to ensure that such removals will not cause unacceptable impacts to native resource, natural process, or other park resources.	
Non-native species, also referred to as non-native, exotic or alien, are not a natural component of the ecosystem. Management of populations of exotic plant and animal species, up to and including eradication, will be undertaken wherever such species threaten park resources or public health and when control is prudent and feasible.	DO -77, Natural Resource Protection, Executive Order 13112, Invasive Species

IMPACTS OF ALTERNATIVE A: NO-ACTION

Impact Analysis

Minor, adverse, long-term impacts to cave vegetation would continue in Alternative A. A recent report indicated that minor trailing indicated considerable site visitation, but trespass did not appear to have altered the site much (NPS 2006). Vegetation inside the cave has been minimally disturbed by visitors. As current management of the cave would continue under this alternative, visitors would still have complete access to the cave and its vegetation. Vegetation outside the cave and along the trail has been minimally impacted. These impacts are negligible and adverse, and would continue under this alternative. Overall, impacts to vegetation due to the No-Action Alternative are negligible to minor, adverse, and long-term. These impacts would be considered regional as very few such caves exist in the areas.

Cumulative Impacts

Impacts from the Bryce Canyon FMP on vegetation would be minor to moderate and adverse in the short-term for very localized areas, but long-term moderate benefits would result due to the restoration of a more natural fire regime and ecological processes. The other projects within the park would contribute negligible, adverse impacts on vegetation in the short-term (during construction) and this alternative would contribute negligible to minor adverse impacts. Overall, cumulative impacts would be minor to moderate and adverse in the short-term and minor to moderate and beneficial in the long-term.

Conclusion

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Bryce Canyon National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's vegetation resources or values.

Impacts of Alternative B: Trail Rehabilitation and Protection of Cave Resources

Impact Analysis

Alternative B would have negligible and adverse impacts to vegetation during project completion as some trampling or removal of individual plants would occur as part of the trail reroute, platform construction, and trail stabilization. Disturbed areas would be revegetated and rehabilitated following construction; therefore, removal and/or disturbance of vegetation in the project area is expected to result in no or negligible adverse impacts to vegetation.

In the long-term, the project would have negligible to minor benefits to the area's vegetation. Currently, vegetation is being lost due to erosion and undercutting of the wash banks. The stabilization work would reduce or eliminate much of this loss. Vegetation in Mossy Cave is currently being impacted when visitors enter the cave and trample or remove it. The construction of a viewing platform near the cave's entrance would limit visitor access allowing the vegetation to recover and remain protected. These impacts would be local to regional in context due to the unusual nature of the cave and its vegetation.

Overall, the Preferred Alternative would have long-term negligible to minor benefits to vegetation.

Cumulative Impacts

Cumulative impacts for Alternative B on vegetation due to the Bryce Canyon FMP and other projects would be the same as for Alternative A. This alternative would contribute negligible to minor benefits to vegetation resulting in overall minor to moderate beneficial cumulative impacts.

Conclusion

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Bryce Canyon National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's vegetation resources or values.

VISITOR USE AND EXPERIENCE

Affected Environment

Bryce Canyon National Park is open year-round and has averaged over 1.5 million visitors per year over the last five years. Mossy Cave (a rock alcove) is a major destination for many park visitors. The Mossy Cave Trail is heavily used by the public due to the relatively level terrain, short hiking distance to the cave and a waterfall and location on Highway 12, a National Scenic Byway. There are almost always cars parked at the trailhead during the high visitation months. The Mossy Cave Trail is an excellent hike for children, senior citizens, or others wishing to see hoodoos up close but without having to hike long trails up and down steep slopes. It is rated as an easy trail with a round trip distance of 0.9 miles and is featured on paper placemats in the

local restaurants. Mossy Cave Trail is the only front country place in the park where visitors can access water, which is very popular for families during the hot summer months.

Currently, one trail section has been lowered to the wash bed, but still needs reinforcing to prevent it from being washed away during rain events. On another trail section, a culvert and small footbridge are being actively undercut by a small spring. The culvert was installed in an area vulnerable to erosion from the spring and it is the culvert's location that is the root of the problem. These eroded and undercut areas pose a potential threat to public safety. At this time, the trail is in poor condition and at risk of being lost altogether.

Very little information regarding the area and its unique resources is available to the public at this time along the trail. One wayside exhibit is near the entrance to Mossy Cave, and it is in poor condition and does not adequately inform the visiting public of the importance of staying out of the cave. Currently, visitors are entering the cave and damaging the hanging gardens and geologic formations, as well as causing severe impacts to the cave floor. Two other waysides are in place along the trail; one discussing the trail and the other discussing the tropic ditch. All are in poor condition.

METHODOLOGY

Staff observation of visitation patterns and the ability of the visitor to effectively experience and understand resources mentioned in the park's significance statements were the basis for determining potential impacts of each alternative. For purposes of analyzing potential impacts, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: Visitors would not be affected or changes in visitor use and/or experience would be below or at the level of detection. Any effects would be short-term. The visitor would not likely be aware of the effects associated with the alternative.

Minor: Changes in visitor use and/or experience would be detectable, although the changes would be slight and likely short-term. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.

Moderate: Changes in visitor use and/or experience would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the alternative, and would likely be able to express an opinion about the changes.

Major: Changes in visitor use and/or experience would be readily apparent and have substantial long-term consequences. The visitor would be aware of the effects associated with the alternative, and would likely express a strong opinion about the changes.

REGULATIONS AND POLICIES

Current laws and policies require that the following conditions be achieved in the park:

Desired Condition	Source
Visitor and employee safety and health are protected.	NPS Management Policies, National Environmental Policy Act
Visitors understand and appreciate park values and resources and have the information necessary to adapt to park environments; visitors have opportunities to enjoy the parks in ways that leave park resources unimpaired for future generations.	NPS Organic Act; NPS Management Policies
Park recreational uses are promoted and regulated and basic visitor needs are met in keeping with park purposes.	NPS Organic Act; Title 36 of the Code of Federal Regulations; NPS Management Policies
All reasonable efforts will be made to make NPS facilities,	Americans with Disabilities Act; Architectural

Desired Condition	Source
programs, and services accessible to and usable by all people, including those with disabilities.	Barriers Act; Rehabilitation Act; NPS Management Policies
Visitors who use federal facilities and services for outdoor recreation may be required to pay a greater share of the cost of providing those opportunities than the population as a whole.	NPS Management Policies; 1998 Executive Summary to Congress, Recreational Fee Demonstration Program, Progress Report to Congress, Volume I -- Overview and Summary (U.S. Department of the Interior, National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management; U.S. Department of Agriculture, Forest Service)
The park has identified implementation commitments for visitor carrying capacities for all areas of the unit.	1978 National Parks and Recreation Act (P.L. 95-625); NPS Management Policies

IMPACTS OF ALTERNATIVE A: NO-ACTION

Impact Analysis

Visitors currently enjoy this trail year-round, and especially enjoy accessing the water and cave during the warm summer months. In this alternative, visitors using the trail would continue to be exposed to possible safety hazards due to narrowing of the trail tread and undercutting of a culvert and small foot bridge. The trail would continue to deteriorate, resulting in long-term negligible to minor adverse impacts on visitor use and experience. In the event that the culvert and bridge were lost due to severe undercutting or deemed too unsafe for use, the trail may have to be closed. As this is the only trail in the park with water access, there would be adverse minor to moderate impacts in the long-term.

Many visitors currently visit Mossy Cave and enjoy entering the cave and seeing the resources up close. For many of these visitors, Alternative A would have minor to moderate beneficial impacts in the long-term due to continued full access to the cave. Unfortunately, the resources are being damaged by some of this visitor traffic. As Alternative A allows visitors to completely access the cave and its resources, resource damage is likely to continue and may result in a diminished experience for some visitors. As a result, Alternative A would have minor to moderate adverse impacts to visitor use and experience due to damaged resources.

Cumulative Impacts

The Bryce Canyon National Park FMP would contribute short-term, minor to moderate, adverse impacts to visitor use and experience, but would also contribute moderate, beneficial impacts in the long-term. Alternative A would contribute long-term negligible to minor adverse impacts to visitor use and experience. Overall, cumulative impacts to visitor use and experience would be negligible to minor and beneficial.

Conclusion

This alternative could have negligible to moderate impacts on visitor use and enjoyment, particularly as the Mossy Cave trail offers access to water and an unusual cave.

IMPACTS OF ALTERNATIVE B: TRAIL REHABILITATION AND PROTECTION OF CAVE RESOURCES

Impact Analysis

Under Alternative B, rehabilitation work would be completed and the trail would return to good condition allowing visitors to continue accessing the cave and waterfall; therefore there would be long-term, beneficial minor to moderate impacts to visitor use and experience. Visitor safety would be enhanced by eliminating narrow trail tread and rerouting the trail around a badly

undercut section. Alternative B also involves installing a viewing platform and fence near the entrance to Mossy Cave, which would prevent visitors from accessing the entire cave. This may have minor to moderate, long-term adverse impacts on some visitors; however, ensuring that the cave and its resources are protected for future generations to enjoy would result in long-term, minor to moderate beneficial impacts.

During the rehabilitation work and viewing platform installation, visitors would be subject to noise and minor inconveniences. These impacts would be adverse, but short-term and negligible to minor in intensity.

Overall, Alternative B would result in beneficial, minor to moderate and long-term impacts to visitor use and experience.

Cumulative Impacts

The Bryce Canyon National Park FMP would contribute short-term, minor to moderate, adverse impacts to visitor use and experience, but would also contribute moderate, beneficial impacts in the long-term. Alternative B would contribute short-term, negligible to minor adverse impacts and beneficial, minor to moderate and long-term impacts. The cumulative impacts on visitor use and experience would be minor to moderate in the short-term and moderate and beneficial in the long-term.

Conclusion

The Preferred Alternative would have long-term, minor to moderate impacts on visitor use and experience in the long-term, with some visitors experiencing minor to moderate adverse impacts due to limited cave access. Short-term impacts would be negligible to minor and adverse due to construction activities.

WATER RESOURCES

AFFECTED ENVIRONMENT

The Mossy Cave trail is located in Water Canyon. From 1890-1892 Mormon Pioneers labored with picks and shovels to carve an irrigation ditch from the East Fork of the Sevier River, through the Paunsaugunt Plateau, into this canyon. Every year since its completion in 1892 (except during the drought of 2002), this canal known as the Tropic Ditch has supplied the communities of Tropic and Cannonville with irrigation water.

From October through April, water flow in the canyon is due to small springs in the area and rainfall or snowmelt. Between mid-April and October, there is an increase in the flow of water when the Tropic and East Fork Irrigation Company transfers water through the Tropic Ditch. The irrigation company has rights to approximately 25 cfs of water from the Tropic Reservoir located west of Bryce Canyon.

METHODOLOGY

Analysis of potential impacts were based upon available information and on detailed observations of existing conditions made during field visits. The following definitions are used to define intensity levels:

Negligible: Water quality would not be affected, or changes would be either nondetectable or, if detected, would have effects that would be considered slight and local.

Minor: Changes in water quality would be measurable, although the changes would be small and the effects would be localized. No mitigation measure associated with water quality would be necessary.

Moderate: Changes in water quality would be measurable, but would be relatively local. Mitigation measures associated with water quality would be necessary and the

measures would likely succeed.

Major: Changes in water quality would be readily measurable, would have substantial consequences, and would be noticed on a regional scale. Mitigation measures would be necessary and their success would not be guaranteed.

REGULATIONS AND POLICIES

Current laws and policies require that the following conditions be achieved in the park:

Desired Condition	Source
Water quality in national parks is protected by the rigorous application of the administrative and regulatory tools of the Clean Water Act (33USC 1251-1376 [1988], 30 June 1948, ch. 758, 62 Stat. 1155). The original 1948 statute has been amended extensively to authorize additional water quality programs, standards and procedures. The Federal Water Pollution Control Act of 1972 was amended in 1977 and renamed the Clean Water Act. It was reauthorized in 1991. The Clean Water Act strives to restore and maintain the chemical, physical and biological integrity of the nation's waters. The act sets up a system of water quality standards, discharge limitations and permit requirements for any actions or proposed actions that may affect the quality of the nation's waters. Through Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers issues permits for activities that result in the discharge of dredged or fill material into water of the United States. Regulated activities range from depositing fill for building pads or roads to discharges associated with mechanized land clearing. In such instances, a Section 401 water quality certification from the State is also required.	Clean Water Act
The NPS will work with governmental bodies to obtain the highest possible standards available under the Clean Water Act and take all necessary actions to maintain or restore the quality of surface waters and ground waters within the parks consistent with the Clean Water Act and all other applicable federal, state, and local laws and regulations.	NPS Management Policies 2001
The Service will perpetuate surface waters and ground waters as integral components of park aquatic and terrestrial ecosystems. The Service will determine the quality of park surface and groundwater resources and avoid, whenever possible, the pollution of park waters by human activities occurring within and outside of parks.	
The policy has two goals: (1) Use a watershed approach to prevent and reduce pollution of surface and ground waters resulting from Federal land and resource management activities; and (2) Accomplish this in a unified and cost-effective manner. Includes developing a science-based approach to watershed assessment for Federal lands. Watershed assessment information will become part of the basis for identifying management opportunities and priorities and for developing alternatives to protect or restore watersheds.	Federal Register/Vol. 65, No. 202, p. 62566-62573, Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management-Notice

IMPACTS OF ALTERNATIVE A: NO-ACTION

Impact Analysis

Alternative A would have long-term negligible to minor impacts on water quality due to erosion. Impacts would be of the higher intensity during storm or run-off events. Areas that are already badly eroded would continue to deteriorate under the No-Action Alternative, impacting local water quality.

Cumulative Impacts

Several of the projects mentioned in the cumulative impact scenario would contribute negligible to minor adverse impacts to water quality in the short-term during construction; however, several would also contribute beneficial impacts to water quality in the long-term. One purpose of the piping of the irrigation ditch is to reduce the salinity level of the water used for irrigation. Use of piping will reduce water evaporation and also reduce the amount of sediments that are picked up in the water. The Utah DOT project along Highway 12 will reduce erosion along the road shoulder and the Dr. Goode Spring project also reduced erosion minimally. These projects contribute negligible to minor beneficial impacts to water quality. As Alternative A would have long-term negligible to minor impacts, the overall cumulative impact would be none to minor.

Conclusion

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Bryce Canyon National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's vegetation resources or values.

Impacts of Alternative B: Trail Rehabilitation and Protection of Cave Resources

Impact Analysis

Alternative B would have minor to moderate adverse impacts on water quality in the short-term during construction when the equipment would travel in the wash bed to move materials for stabilization of the trail and undercut bridge abutment. To reduce impacts to water quality, all work within the wash would be scheduled after the Tropic and East Fork Irrigation Company stops transferring water through the wash in the Fall (approximately October 15) and before they begin the water transfer in the Spring (approximately April 1). As a result of this mitigation, impacts would be reduced to negligible to minor and would be very site-specific. An Army Corps of Engineers 404 permit would be obtained prior to beginning work.

In the long-term, Alternative B would have negligible to minor beneficial impacts on local water quality due to the reduction in erosion. The badly eroded and undercut areas of the trail and bridge abutment would be stabilized using large boulders, resulting in less erosion.

Cumulative Impacts

The impacts from projects discussed in the cumulative impact scenario would be the same for Alternative B as they were for Alternative B. This alternative would contribute negligible to minor adverse impacts in the short-term and negligible to minor beneficial impacts in the long-term, resulting in minor to moderate beneficial cumulative impacts to water quality in the long-term.

Conclusion

Because there would be no major, adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of Bryce Canyon National Park; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning documents, there would be no impairment of the park's water resources or values.

CONSULTATION/COORDINATION

AGENCIES/TRIBES/ORGANIZATION/INDIVIDUALS CONTACTED

U.S. Fish and Wildlife Service

Utah State Historic Preservation Office

The Hopi Tribe, Cultural Preservation Office

Advisory Council on Historic Preservation

PREPARERS

Ann Gavin, Environmental Protection Specialist, Intermountain Regional Office

Kristin Legg, Chief, Resource Management, Bryce Canyon National Park

Mark Biel, Resource Management Specialist, Bryce Canyon National Park

Joseph David, Biological Technician, Bryce Canyon National Park

LIST OF RECIPIENTS

The Environmental Assessment will be released for public review on June 30, 2006. To inform the public of the availability of the Environmental Assessment, the National Park Service will publish and distribute a letter or press release to various agencies, and members of the public on the National Historic Site's mailing list, as well as place a press release in the local newspaper. Copies of the Environmental Assessment will be provided to interested individuals, upon request. Copies of the document will also be available for review at Bryce Canyon National Park's visitor center and on the internet at the National Park Service Planning, Environment, and Public Comment (PEPC) website (http://parkplanning.nps.gov/).

The Environmental Assessment is subject to a 30-day public comment period ending July 30, 2006. During this time, the public is encouraged to submit their written comments to the National Park Service address provided at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed, prior to the release of a decision document. The National Park Service will issue responses to substantive comments received during the public comment period, and will make appropriate changes to the Environmental Assessment, as needed.

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Forest Service
- Kaibab NF
- Dixie NF

Natural Resource Conservation Service
Army Corps of Engineers
Environmental Protection Agency
Department of Interior
- Fish and Wildlife Service
- Geological Survey
- National Biological Survey
- Bureau of Land Management
- National Park Service
  - Multiple parks in the region

INDIAN TRIBES

Letters requesting tribal consultation were mailed to the following tribes: Ute, Navajo, Goshute, Shoshoni, Hopi, Pueblo of Zuni, Chemehuevi and Paiute. No responses were received during the scoping period.

STATE AND LOCAL AGENCIES

City of Cannonville
City of Hatch
City of Panguitch
City of Tropic
City of Cedar City
City of Kanab
City of Orderville

Iron County
Garfield County
Kane County

State Historic Preservation Office
State Land Department
Anasazi Indian Village State Park
Coral Pink Sand Dune State Park
Kodachrome Basin State Park
Utah Department of Agriculture and Food
Utah Division of Air Quality
Utah Division of Drinking Water
Utah Department of Environmental Quality
Utah Natural Heritage Program
Utah Office of Planning and Budget
Utah Department of Transportation
Utah Division of Water Quality
Utah Department of Water Resources
Utah Division of Water Rights
Utah Division of Wildlife Resources
Utah Office of the Governor
Utah State Clearinghouse
Utah State Parks and Recreation

ORGANIZATIONS

Scenic Byway 12 Committee
Utah Wildlife Federation
National Parks Conservation Association
National Trust on Historic Preservation
National Wildlife Federation
Sierra Club
The Wilderness Society
The Nature Conservancy
Southwest Forest Alliance
National Park Foundation
Southern Utah Wilderness Alliance
Defenders of Wildlife
Utah Native Plant Society

Bryce Valley Business Association
Grand Canyon Trust
Grand Canyon Wildlands Council
Audubon Society
Wilderness Watch
Utah Wilderness Association
Utah Heritage Foundation
Partners in Parks

INDIVIDUALS

The list of individuals receiving this Environmental Assessment is available from Bryce Canyon National Park.

REFERENCES

S. Dominguez, D. Danielson, and K. Kramer

1992 Archeological Survey of Trail Maintenance, Revegetation, and Prescribed Burn Areas in Bryce Canyon National Park. US DOI Midwest Archeological Center, Lincoln, Nebraska, Technical Report No. 18.

Bureau of Reclamation, U.S. Department of the Interior

2006 Preliminary Draft Environmental Assessment Tropic Ditch Replacement Project, Garfield County, Utah. Bureau of Reclamation, Provo Area Office. Tropic and East Fork Irrigation Company.

National Park Service, U.S. Department of the Interior

2006 Internal Report: Mossy Cave Spring, Bryce Canyon NP, BRCA_S0002.

2003 *Director's Order #77-2 and Procedural Manual #77-2 Floodplain Management*.

2002 *Director's Order #77-1: Wetland Protection, and Procedural Manual #77-1.*

2002 Bryce Canyon Archeological Inventory Report by Christopher Wenker, U.S. Department of the Interior, National Park Service, Intermountain Support Office, Santa Fe, New Mexico.

2001 *Management Policies 2001*. NPSD1416/December 2000.

2001 *Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-Making and Reference Manual.*

1994 National Register of Historic Places Registration Form (NPS Form 10-900).

1991 NPS 77 Resource Management Guidelines. U.S. Department of the Interior, Washington, D.C., USA.

1981 General Management Plan - Bryce Canyon National Park.

U.S. Department of the Interior

1997 Interior's Secretarial Order No. 3206, "American Indian Tribal Rites, Federal – Tribal Trust Responsibilities, and the Endangered Species Act."

1995 *Interior Departmental Manual, Part 512: American Indian and Alaska Native Programs, Chapter 2: Departmental Responsibilities for Indian Trust Resources.*

F. J. Peabody

1997 Rare Plants List - Bryce Canyon National Park. Unpublished manuscript available at

Bryce Canyon National Park.

1995 Rare Plants of Bryce Canyon National Park, Utah. Bryce Canyon Resource Management Files.

Roberts, D.R., D.W. Wright, and G.P.Hallsten

1992 Plant Community Distribution and Dynamics in Bryce Canyon National Park. Bryce Canyon Resource Management Files. State of Utah 2004. Division of Wildlife Resources, Utah Conservation Data Center Web site; available at <http://dwrcdc.nr.utah.gov/ucdc/default.asp>. Includes copy of Endemic and Rare Plants of Utah: An Overview of their Distribution and Status.

United States Congress (USC)

1970 Clean Air Act. 42 U.S.C. s/s 7401 et seq. Washington, D.C.

1970 National Environmental Policy Act of 1969. Pub. L. 91- 190, 42 USC 4321- 4347. January 1, 1970. Washington, D.C.

1966 National Historic Preservation Act. PL 89- 665; 16 U.S.C. 470 et seq. October 15, 1966. Washington, D.C.

1916 National Park Service Organic Act. 39 Stat. 535; 16 USC 1- 4. August 25, 1916. Washington, D.C.

U.S. Fish and Wildlife Service

2002 Memorandum with List of Threatened and Endangered Species from Utah Field Office, West Valley City, Utah. Memo on file at Denver Service Center.

U.S. Department of Agriculture

1990 Soil Survey of Panguitch Area, Utah, Parts of Garfield, Iron, Kane, and Piute Counties. USDA, Soil Conservation Service, Soil Survey Staff.

APPENDIX A: PUBLIC INVOLVEMENT

Notice of Scoping
Bryce Canyon National Park, Utah
Mossy Cave Trail Rehabilitation Environmental Assessment
March 2006

Dear Friend of Bryce Canyon National Park:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) in support of rehabilitating the Mossy Cave Trail and protecting Mossy Cave. The EA is needed in order to evaluate potential impacts to the natural and cultural environment from proposed rehabilitation and stabilization activities along the Mossy Cave Trail, and to protect the resources of Mossy Cave. The NPS is soliciting comments from the public to help identify issues and develop alternative rehabilitation and resource protection approaches that will be evaluated in the EA.

You are invited to provide your comments and become part of this planning effort. For your convenience, a comment form is attached to this scoping notice.

Why does Bryce Canyon need to rehabilitate the Mossy Cave Trail and protect cave resources?

The purpose of rehabilitating the Mossy Cave Trail is to repair damage due to erosion. In 2003, monsoon rains caused a local stream to shift course and undercut a large portion of the trail. That storm, and subsequent rain events, have caused the trail to erode, reducing the width of the hiking surface. Materials that support nearby bridge abutments have also been eroding, which is beginning to undercut the bridge support. On one area of the trail, a culvert and small footbridge are being actively undercut by a small spring. The trail is heavily used by the public due to the relatively level terrain and short hiking distance to the cave and a waterfall, and the eroded and undercut areas pose a potential threat to public safety. At this time, the trail is in poor condition and at risk of being lost altogether.

The purpose of protection activities at Mossy Cave is to prevent additional damage to the resources and allow them to recover to healthy conditions. This resource is extremely unusual in the region, as Mossy Cave represents one of the only examples of hanging gardens on the entire Paunsaugunt Plateau. The availability of water allows for the presence of a wide variety of vertebrate and invertebrate faunal species, in addition to several rare plant species. Mossy Cave (a rock alcove) is a major destination for many park visitors. Currently, visitors are entering the rock alcove and damaging the hanging gardens and geologic formations, as well as causing severe impacts to the cave floor. The impact of human presence inside the cave has resulted in loss of vegetation, changes in the water flow pattern, and alterations of ice formation.

Have preliminary issues and alternatives been identified?

The NPS has identified preliminary issues related to trail rehabilitation and cave resource protection that will be analyzed through the EA process. Issues and/or alternatives identified through public scoping will be added to the following and addressed in the EA.

The EA will identify and analyze:

- methods to stabilize the eroded bridge abutment;
- methods to eliminate the problems associated with the undercut culvert and small bridge;
- methods to protect cave resources while maintaining some level of public access;

- effects on soils, vegetation, and water resources;
- effects on cultural resources; and
- effects on visitor experience.

What's next?

Once the NPS has received and reviewed the scoping comments, alternatives will be developed and incorporated into the EA. The Mossy Cave Trail Rehabilitation EA is expected to be available for review in spring or early summer 2006.

If you wish to remain on the mailing list and receive future information about this project/EA, please check the box on the comment form, print your name and mailing address, and return to the address listed above.

Thank you for your interest in Bryce Canyon National Park and your participation in the development of the Mossy Cave Trail Rehabilitation EA. If you have questions, please contact Mark Biel, Resource Management Specialist, Bryce Canyon National Park, 435-834-4901.

Please submit your comments on any issues associated with this project

in one of the following ways by April 13, 2006:

Submit written comments to:	**Comment via the internet through the NPS's Planning, Environment, and Comment website,**	**Hand-deliver comments to:**
Bryce Canyon National Park	***<http://parkplanning.nps.gov>***	***Bryce Canyon National Park***
Mossy Cave Trail EA		***Visitor Center Building***
P.O. Box 640201		***Hwy 63***
Bryce, UT 84764		***Bryce Canyon NP, UT***

Scoping Comment Form
Bryce Canyon National Park, Utah
Mossy Cave Trail Rehabilitation Environmental Assessment

Please respond to the following questions and **return this form by April 13, 2006**. You may attach additional pages if needed. Also, include your name and mailing address in the space provided below. Thank you again for your interest in Bryce Canyon National Park.

Please be aware that names and addresses of respondents may be released if requested under the Freedom of Information Act. Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold from the record a respondent's identity, as allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your written comments. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

What issues would you like to see addressed?

_____

_____

_____

_____

_____

What alternatives or strategies would you like to see addressed?

_____

_____

_____

_____

_____

Do you have additional information, concerns, or other comments about the proposal?

_____

_____

_____

_____

☐ **Please check the box if you would like to remain on the mailing list to receive additional information concerning this proposal.**

Name: _____

Street/Box #: _____

City, State, Zip Code: _____

Fold along line and tape closed

Place
1st Class
Postage

_____

_____

_____

BRYCE CANYON NATIONAL PARK
MOSSY CAVE TRAIL EA
PO BOX 640201
BRYCE CANYON, UT 84764

Fold along line and tape closed

APPENDIX B: NATIONAL REGISTER OF HISTORIC PLACES REGISTRATION FORM

NPS Form 10-900
(Rev. 10-90)

OMB No. 1024-0018

United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
REGISTRATION FORM

1. Name of Property

historic name: Mossy Cave Trail

other name/site number: N/A

2. Location

street & number: Bryce Canyon National Park

not for publication: n/a
vicinity: X

city/town: Bryce Canyon

state: Utah code: UT county: Garfield code: 017 zip code: 84717

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this __ nomination X request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property __ meets X does not meet the National Register Criteria. I recommend that this property be considered significant ___ nationally ___ statewide ___ locally. (__ See continuation sheet for additional comments.)

Signature of certifying official/Title Date

National Park Service
State or Federal agency or bureau

In my opinion, the property ____ meets ____ does not meet the National Register criteria.

Signature of commenting or other official Date

Utah State Historic Preservation Office

State or Federal agency and bureau

4. National Park Service Certification

I, hereby certify that this property is: Signature of the Keeper Date of Action

____ entered in the National Register
__ see continuation sheet
____ determined eligible for the National Register
__ see continuation sheet
____ determined not eligible for the National Register
__ see continuation sheet
____ removed from the National Register
__see continuation sheet
_ other (explain):

5. Classification

Ownership of Property: Government-Federal

Category of Property: Structure

Number of contributing resources previously listed in the National Register: N/A

Name of related multiple property listing: Bryce Canyon National Park Multiple Property Submission

Number of Resources within Property		
Contributing	Noncontributing	
0	0	building(s)
0	0	sites
0	1	structures
0	0	objects
0	1	Total

6. Function or Use

Historic Functions:
Recreation; outdoor recreation

Current Function:
Recreation, outdoor recreation

7. Description

Architectural Classification:
N/A

Materials:
foundation: N/A
walls: N/A
roof: N/A
other: N/A

Narrative Description

This unpaved graded trail is approximately one half mile in length and four to five feet in width. The trail parallels the course of Water Canyon. It is located in the bottom of the drainage for most of its length, and is surrounded by bare sandstone and sparse stands of ponderosa pine. On the last short pitch to Mossy Cave, the trail is cut into the hillslope, which contains rather dense vegetation, due to the presence of springs emanating from the hillslope.

6. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:

Applicable National Register Criteria: N/A	Areas of Significance: N/A
Criteria Considerations (Exceptions): N/A	Period(s) of Significance: N/A
Significant Person(s): N/A	Significant Dates: N/A
Cultural Affiliation: N/A	Architect/Builder: NPS

Narrative Statement of Significance

The Mossy Cave Trail is isolated from the remainder of Bryce Canyon National Park's (BRCA) scenic trails. It is located at the northeast edge of the park, and is accessed from State Highway 54. This short trail leads to overview points in Water Canyon (the natural drainage path that channels the flow from the Tropic Ditch through BRCA) and to Mossy Cave. During some years, Mossy Cave contains rather spectacular ice formations in the spring months.

Maurice Cope (BRCA Ranger) first proposed construction of a trail to Mossy Cave in 1929, in his monthly report to Donald Jolley, Chief Ranger at Zion National Park. This recommendation came in part as a justification for enlarging the park boundary. However, later historical documents relating specifically to trails and to the BCNP Master Plan do not mention the Mossy Cave Trail. As late as 1960, this trail is not included in the BCNP roads and trails system documents. Although a rudimentary trail to Mossy Canyon may have been in existence since the late 1920s, the current trail with its new timber bridges is believed to represent a modern resource. This trail does not figure prominently in National Park Service administrative records, is not a component of the BCNP Master Plan, and is not historically significant resource.

Mossy Cave Trail
Name of Property

Garfield County, Utah
County and State

9. Major Bibliographic References

Previous documentation on file (NPS):

___ preliminary determination of individual listing (36 CFR 67) has been requested.
___ previously listed in the National Register
___ previously determined eligible by the National Register
___ designated a National Historic Landmark
___ recorded by Historic American Buildings Survey # _____
___ recorded by Historic American Engineering Record # _____

Primary Location of Additional Data:

__ State Historic Preservation Office
___ Other State agency
_X_ Federal agency
___ Local government
___ University
___ Other -- Specify Repository:

10. Geographical Data

Acreage of Property:

UTM References:	Zone	Easting	Northing
	Point A 10	402120	4169080
	Point B 10	401760	4168880

Verbal Boundary Description

N/A

Boundary Justification

N/A

11. Form Prepared By

name/title: Janene Caywood
organization: Historical Research Associates, Inc. date: December 31, 1994
street & number: P.O. Box 7086 telephone: 406 721-1958
city or town: Missoula state: MT zip code: 59807-7086

Property Owner

name/title: Bryce Canyon National Park
street & number: telephone: 801 834-5322
city or town: Bryce Canyon state: UT zip code: 84717

APPENDIX C: USFWS LETTER

United States Department of the Interior
FISH AND WILDLIFE SERVICE
UTAH FIELD OFFICE
2369 WEST ORTON CIRCLE, SUITE 50
WEST VALLEY CITY, UTAH 84119

In Reply Refer To
FWS/R6
ES/UT
04-0416

January 22, 2004

To: Craig C. Axtell, Superintendent, Bryce Canyon National Park, National Park Service

From: Utah Field Supervisor, Ecological Services, U.S. Fish and Wildlife Service, Salt Lake City, Utah

Subject: Fire Management Plan EA Bryce Canyon National Park

The U.S. Fish and Wildlife Service (FWS) has reviewed your letter of January 5, 2004, announcing your intent to prepare an Environmental Assessment (EA) in support of a Fire Management Plan (FMP). The purpose of the project is to provide a comprehensive plan covering all vegetation communities found in Bryce Canyon National Park. The EA will evaluate the potential impacts to the natural and cultural environments from proposed fire management activities.

Consistent with NEPA regulation 40 CFR § 1503.1(a)(1) that the action agency shall obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved, we are responding to your request for concerns and comments on this project. In Section 1 of this letter we convey our concerns that should be addressed in the EA for the FMP. Section 2 of this letter addresses your Endangered Species Act (ESA) Section 7 responsibilities and provides a species list.

Section 1.

Based on a telephone conversation between Bruce Fields (NPS) and Bekee Megown (FWS) on January 20, 2004, it is our understanding that invasive species issues will be addressed in the EA. Detailed inventory and mapping of invasive species in and near project areas could identify potential problems. Fire Management tools should be evaluated to assess potential for increased spread of invasive species and develop measures to avoid and/or control invasive plant species.

Impacts on wildlife and their habitats from project activities would vary depending on disturbance size, patterns, seasonality, and frequency. We recommend that the EA discuss the range of impacts this project would cause to plants, pollinators, terrestrial and aquatic wildlife, and sensitive areas. The EA should discuss the expected future vegetation communities and

effects to wildlife resulting from changes in the extent, distribution, and composition of vegetative communities. To minimize impacts to endangered, threatened, and sensitive species, suitable acres and juxtaposition of habitat for the species should be maintained through time.

Activities should avoid, to the extent possible, sensitive wildlife periods and areas (breeding season, calving season, migration corridors). Impacts to migratory bird habitat should be evaluated and minimized, focusing on species on the Service's 2002 List of Birds of Conservation Concern and the Partners in Flight Priority Bird Species. To help meet responsibilities under Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds), we recommend you conduct activities outside critical breeding seasons for migratory birds, minimize temporary and long-term habitat losses, and mitigate unavoidable habitat losses. If your activities occur in the spring or summer, we recommend you conduct surveys for migratory birds to assist you in your efforts to comply with the Migratory Bird Treaty Act (16 U.S.C. 703-712) and E.O. 13186.

We recommend use of the *Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances* (Romin and Muck, 2002) which were developed in part to provide consistent application of raptor protection measures statewide and provide full compliance with environmental laws regarding raptor protection. Raptor surveys and mitigation measures are provided in the Raptor Guidelines as recommendations to ensure that proposed projects will avoid adverse impacts to raptors. Locations of existing raptor nests should be identified prior to the initiation of the project activities. Direct loss of nesting sites or territories should be avoided. Appropriate spatial buffer zones of inactivity should be established during crucial breeding and nesting periods relative to raptor nest sites or territories. Arrival at nesting sites can occur as early as December for certain raptor species. Nesting and fledging continues through August. Generally we recommend spatial buffers of 1.0 mile for threatened or endangered raptors, 0.5 mile for other diurnal raptors, and 0.25 mile for nocturnal raptor nests.

For fire management projects near streams, we recommend that the NPS consider using the guidelines listed in the Inland Native Fish Strategy (INFISH) (USFS 1995). As per INFISH, no disturbance should occur within a buffer zone of 300' on each side of perennial fish bearing streams, 150' on each side of perennial non-fish bearing streams, and between 50' - 100' on each side of intermittent streams. Riparian areas are sensitive habitats which are relatively scarce and highly valuable to many species of insects, amphibians, reptiles, fishes, birds and mammals. Impacts to these areas should be avoided to the greatest extent possible.

The impacts to channel/riparian processes should be limited by reducing sedimentation into streams. If the fire management activities are likely to lead to some form of erosion, proposed erosion control measures should be discussed in the EA.

Section 2.

Federal agencies have specific additional responsibilities under Section 7 of the ESA. To help you fulfill these responsibilities, we are providing an updated list of threatened (T), endangered (E) and candidate (C) species that may occur within Kane County:

Species	Scientific Name	Status[1]
Aquarius Paintbrush	*Castilleja aquariensis*	C
Autumn Buttercup	*Ranunculus aestivalis*	E
Jones Cycladenia	*Cycladenia humilis* var. *jonesii*	T
Kodachrome Bladderpod	*Lesquerella tumulosa*	E
Maguire Daisy	*Erigeron maguirei*	T
Navajo Sedge	*Carex specuicola*	T
Siler Pincushion Cactus	*Pediocactus sileri*	T
Ute Ladies'-tresses	*Spiranthes diluvialis*	T
Welsh's Milkweed[2]	*Asclepias welshii*	T
Bald Eagle[3]	*Haliaeetus leucocephalus*	T
California Condor[4]	*Gymnogyps californianus*	E
Mexican Spotted Owl[2,5]	*Strix occidentalis lucida*	T
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	E
Western Yellow-billed Cuckoo	*Coccyzus americanus occidentalis*	C
Utah Prairie Dog	*Cynomys parvidens*	T

[1] Candidate species have no legal protection under the Endangered Species Act. However, these species are under active consideration by the Service for addition to the Federal List of Endangered and Threatened Species and may be proposed or listed during the development of the proposed project.
[2] Critical habitat designated in this county.
[3] Wintering populations (only four known nesting pairs in Utah).
[4] Experimental nonessential population.
[5] Nests in this county of Utah.

The proposed action should be reviewed and a determination made if the action will affect any listed species or their critical habitat. If it is determined by the Federal agency, with the written concurrence of the Service, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is complete, and no further action is necessary.

Formal consultation (50 CFR 402.14) is required if the Federal agency determines that an action is "likely to adversely affect" a listed species or will result in jeopardy or adverse modification of critical habitat (50 CFR 402.02). Federal agencies should also confer with the Service on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10). A written request for formal consultation or conference should be submitted to the Service with a completed biological assessment and any other relevant information (50 CFR 402.12).

Candidate species have no legal protection under the Endangered Species Act (ESA). Candidate species are those species for which we have on file sufficient information to support issuance of a proposed rule to list under the ESA. Identification of candidate species can assist environmental planning efforts by providing advance notice of potential listings, allowing resource managers to alleviate threats and, thereby, possibly remove the need to list species as endangered or threatened. Even if we subsequently list this candidate species, the early notice provided here could result in fewer restrictions on activities by prompting candidate conservation measures to alleviate threats to this species.

Only a Federal agency can enter into formal Endangered Species Act (ESA) section 7 consultation with the Service. A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment by giving written notice to the Service of such a designation. The ultimate responsibility for compliance with ESA section 7, however, remains with the Federal agency.

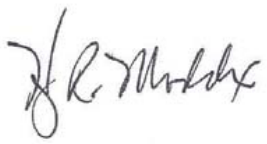
Your attention is also directed to section 7(d) of the ESA, as amended, which underscores the requirement that the Federal agency or the applicant shall not make any irreversible or irretrievable commitment of resources during the consultation period which, in effect, would deny the formulation or implementation of reasonable and prudent alternatives regarding their actions on any endangered or threatened species.

Please note that the peregrine falcon which occurs in all counties of Utah was removed from the federal list of endangered and threatened species per Final Rule of August 25, 1999 (64 FR 46542). Protection is still provided for this species under authority of the Migratory Bird Treaty Act which makes it unlawful to pursue, hunt, take, capture, or kill migratory birds, their parts, nests, or eggs (16 U.S.C. 703-712). When taking of raptors or other migratory birds is determined by the applicant to be the only alternative, application for federal and state permits must be made through the appropriate authorities. For take of raptors; nests occupied by eggs or nestlings; nests still essential to the survival of the juvenile bird; nestlings; or eggs, Migratory Bird Permits pursuant to 50 CFR parts 13 and 21 must be obtained through the Service's Migratory Bird Permit Office in Denver at (303) 236-8171

The following is a list of species that occur within the counties that the project area lies within and are managed under Conservation Agreements/Strategies. Conservation Agreements are voluntary cooperative plans among resource agencies that identify threats to a species and implement conservation measures to proactively conserve and protect species in decline. Threats that warrant a species listing as a sensitive species by state and federal agencies and as threatened or endangered under the ESA should be significantly reduced or eliminated through implementation of the Conservation Agreement. Project plans should be designed to meet the goals and objectives of these Conservation Agreements.

Species	Scientific Name
Aquarius Paintbrush	*Castillega aquariensis*
Arizona Willow	*Salix arizonica*
Colorado River Cutthroat Trout	*Oncorhynchus clarki pleuriticus*

We appreciate the opportunity to provide these comments. If you need further assistance, please contact Bekee Megown, Fish and Wildlife Biologist, at the letterhead address or (801) 975-3330 ext. 146.



APPENDIX D: SPECIAL STATUS SPECIES INFORMATION

Plants

The following list was provided through consultation with the U.S. Fish and Wildlife Service (USFWS) website (*http://mountain-prairie.fws.gov/ut.html*). These species may occur within the two counties in which the park lies.

Federally Listed Plant Species			
Common Name	**Scientific Name**	**Federal Status**	**Found in Bryce Canyon***
Autumn Buttercup	*Ranunculus aestivalis*	Endangered	No
Kodachrome Bladderpod	*Lesquerella tumulosa*	Endangered	No
Navajo Sedge	*Carex specuicola*	Threatened	No
Siler Pincushion Cactus	*Pediocactus sileri*	Threatened	No
Welsh's Milkweed	*Asclepias welshii*	Threatened	No
Jones Cyclandenia	*Cyclandenia humilis var. jonesii*	Threatened	No
McGuire Daisy	*Erigeron maguirei*	Threatened	No
Ute's Ladies Tresses	*Spiranthes diluvialis*	Threatened	No
Aquarius Paintbrush	*Castilleja aquariensis*	Candidate	No

*Based on staff knowledge, various plant surveys documented by the Utah State Conservation Data Center, and/or lack of preferred habitat in the park.

As noted in the above table, none of the species listed above are known to occur in Bryce Canyon. Specific notes for each species are listed below.

Autumn buttercup (*Ranunculus agestivalis)* is a narrow endemic and occurs only in the Sevier River Valley, Garfield County, in wet meadows.

Kodachrome bladderpod (*Lesquerella tumulosa)* is a narrow endemic and occurs only in Kane County on shallow soils intermixed with shale fragments derived from the Windsor Member of the Carmel Formation.

Navajo sedge (*Carex specuicola)* occurs in canyons in Kane County but is restricted to seeps, springs, and hanging garden habitats in Navajo sandstone.

Siler pincushion cactus (*Pediocactus sileri)* occurs in Kane County on sandy or clay soils derived from the various members of the Moenkopi Formation.

Welsh's milkweed (*Asclepias welshii)* occurs in Kane County on dunes derived from Navajo sandstone.

Jones cyclandenia (*Cycladenia humilis var. jonesii)* is restricted to the canyonlands of the Colorado Plateau and grows in gypsum soils derived from the Summerville, Cutler, and Chinle Formations.

McGuire daisy (*Erigeron maguirei)* grows on the sand and detritus weathered from

Navajo sandstone in crevices, on ledges, and bottoms of washes.

Ute's ladies tresses (*Spiranthes diluvialis)* occurs in several Utah counties, but is found only in moist to very wet meadows, along streams, and near seeps, springs, or lake shores.

Aquarius paintbrush (*Castilleja aquariensis)* occurs on the Aquarius Plateau and on the Boulder Top in Garfield and Wayne Counties, in clay loam or gravelly clay soils.

Bryce Canyon is home to nine plant species considered sensitive or of special concern due to their limited distribution (endemism) or because they are disjunct from more abundant population centers. These species are recognized by park staff or past studies as being rare (Peabody 1995; 1997), and/or are listed by the State of Utah National Heritage Program and documented on the list of "Endemic and Rare Plants of Utah: An Overview of their Distribution and Status" (State of Utah 2004). In 1997, Dr. F. Peabody completed a field survey of eight of these species that were formerly "Candidate—Priority 2" (C2) federal species. Many of these species are found only on barren areas along the breaks and in open pine woodland habitats on bare, gravelly soils. The table below lists Bryce Canyon's sensitive plants according to habitat and their associated state status, if applicable. There are no known federally or state listed plant species that occur within the area of the proposed rehabilitation project. The area around Doctor Goode Springs, which is within 0.25 mile of the proposed Mossy Cave Trail rehabilitation project, was surveyed for federally and state listed sensitive plant species found within the park and none were observed (BRCA 2002).Therefore, no federally listed or state listed plant species will be considered in this assessment.

Sensitive Plant Species			
Common Name	**Scientific Name**	**State Status Category1**	**State Heritage Program Classification2**
Paria Breadroot	*Lomatium minimum*	Watch	G3/S3
Painted Desert Beard-Tongue	*Penstemon caespitosus*	Watch	G5T3/S2
Reveal Paintbrush	*Castilleja parvula var. revealii*	--	--
Yellow-White Cryptanth	*Cryptantha ochroleuca*	--	--
Jones Goldenaster	*Heterotheca jonesii*	--	--
Jones Oxytrope	*Oxytropis oreophila var. jonesii*	--	--
Platy Penstemon or Red Canyon Beardstongue	*Penstemon bracteatus*	--	--
Maguire Campion	*Silene petersonii*	Watch	G2G3/S2S3
Least Townsendia	*Townsendia montana var. minima*	Watch	G3/S3

[1] Watch – plants regionally endemic but without range-wide viability concern.
[2] G = Global /S = State. Numbers indicate rarity, with lower numbers (1, 2) indicating extreme rarity or vulnerability to extinction.

Wildlife

The animal species listed in the following table and described below either occur or have the potential to occur within Bryce Canyon. The list is based on consultation with the USFWS. If the species is also listed by the State of Utah, its state status is indicated.

Federally Listed and Candidate Animal Species					
Common Name	**Scientific Name**	**Federal Status**	**State Status**	**Found in Bryce Canyon?***	**Comments**
Mexican Spotted Owl	*Strix occidentalis lucida*	Threatened	S-ESA (sensitive)	No	None found during several park surveys
Bald Eagle	*Haliaeetus leucocephalus*	Threatened	S-ESA (sensitive)	Yes	Winter resident/migrant
California Condor	*Gymnogyps californianus*	Endangered	S-ESA (sensitive)	Yes	Intermittent visitor; experimental population
Western Yellow-Billed Cuckoo	*Coccyzus americanus occidentalis*	Candidate	S-ESA (sensitive)	Yes	One sighting in Sheep Creek; no known nesting
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered	S-ESA (sensitive)	Yes	A few sightings along Sheep and Yellow Creeks; no nesting
Utah Prairie Dog	*Cynomys parvidens*	Threatened	S-ESA (sensitive)	Yes	Breeds in park; several colonies
Kanab Ambersnail	*Oxyloma haydeni kanabensis*	Endangered	S-ESA (sensitive)	No	Limited habitat
Coral Pink Sand Dune Tiger Beetle	*Cincindela limbata albissima*	Candidate	S-ESA (sensitive)	No	No habitat
Colorado Pikeminnow	*Ptychocheilus lucius*	Endangered	S-ESA (sensitive)	No	Limited habitat
Razorback Sucker	*Xyrauchen texanus*	Endangered	S-ESA (sensitive)	No	Limited habitat
Humpback Chub	*Gila cypha*	Endangered	S-ESA (sensitive)	No	Limited habitat
Bonytail	*Gila elegans*	Endangered	S-ESA (sensitive)	No	Limited habitat

*Based on surveys, park staff knowledge, presence of preferred habitat, and known range.

The **Mexican spotted owl** (*Strix occidentalis lucida*), which is federally listed as a threatened species and a state-listed sensitive species, is not found within Bryce Canyon. Surveys were performed from 1993 to 1995 in several areas predicted to be suitable habitat for the owl in order to identify the extent of the Utah Range for this species. No Mexican spotted owls were seen or heard along any of the surveyed

transects in the park (Bryce Canyon National Park 2002a). Another survey was completed in 2003, and no owls were documented at that time (K. Legg, personal communication 2004). Bryce Canyon contains very limited preferred habitat for the owl, so these results are not unexpected.

The **bald eagle** (*Haliaeetus leucocephalus*), a federally threatened species and state-listed sensitive species, is a winter resident and migrant, and does not breed in the park. Bald eagles are more commonly seen along the cliffs and breaks of the park and along some streams and reservoirs outside of the park.

The federally endangered and state sensitive **California condor** *(Gymnogyps californianus)* is an intermittent visitor in the park and is part of an experimental population in Utah. They are not known to use the park consistently, and do not use the park as a breeding area.

The **western yellow-billed cuckoo** *(Coccyzus americanus occidentalis)* is a federal candidate species and state-listed sensitive species. It is considered a rare visitor in the park, and there has been only one sighting of this bird along Sheep Creek in 2002 (Bryce Canyon National Park 2002b). Their primary breeding habitat is an overstory of cottonwood canopy, which is rare in the park.

The **southwestern willow flycatcher** (*Empidonax traillii extimus*) is federally endangered and a state-listed sensitive species. It nests primarily in mid-to-low elevation riparian habitat along rivers, streams, or other wetlands where a dense growth of willows or other plants are present. This habitat is very rare in Bryce Canyon. Several surveys for southwestern willow flycatcher were conducted along riparian areas in the park since 1995. A few sightings were recorded along the Yellow Creek and Sheep Creek/Swamp Canyon drainages, but no signs of nesting or nesting behavior have been observed (Bryce Canyon National Park 1996-2002).

The **Utah prairie dog** (*Cynomys parvidens*), a federally threatened species and state-listed sensitive species, occurs in several colonies in the central and northern portions of the park that contain open, grassy meadows. The Utah prairie dog, a burrowing rodent in the squirrel family (Sciuridae), occurs only in southwestern Utah. It is a member of the white-tailed prairie dog group that once inhabited vast areas of the western Great Plains. The Utah prairie dog is the most restricted of the three members of this group. Its total numbers declined drastically from the 1920s to 1976. This decline was caused by human-related habitat alteration and by intentional poisoning, which resulted from the belief that prairie dogs compete with domestic livestock for forage. At present, the Utah prairie dog is still threatened over much of its range by loss of habitat. Despite the problems listed above, the Utah prairie dog saw an increase in overall population numbers between 1976 and 1991 (USFWS 1991). However, the population numbers have fluctuated overtime and have not continued on an upward trend (Utah Prairie Dog Recovery Implementation Team 1997). At Bryce Canyon National Park, Utah prairie dog reestablishment occurred between 1974 and 1988 after being eradicated from the park in the 1950s (Bryant 1995; Stebbins 1971). Since the reestablishment program, prairie dog population numbers at Bryce Canyon have fluctuated from under 50 animals to over 200 (Wallen 2000). Colonies are found in the meadows of the park. The Mixing Circle and Mixing Circle Junction areas are meadows and the Mixing Circle represents the largest viable colony of Utah prairie dogs in the park. There are no colonies located in the area of the proposed stabilization project so no impacts are expected as a result of

initiating this project.

The **Kanab ambersnail** *(Oxyloma haydeni kanabensis)*, a federally endangered and state-listed sensitive species, is not known to occur in the park. Kanab ambersnails are found in three distinct localities: Three Lakes and Kanab Creek in Utah, and another population in Arizona (UDWR 2001). All of these areas are disjunct from the park.

The **Coral Pink Sand Dunes tiger beetle** *(Cincindela limbata albissima)*, a federally endangered and state-listed sensitive species, is not found in Bryce Canyon. Its distribution is limited to the sand dunes within Coral Pink Sand Dunes State Park and also on adjacent lands managed by the Bureau of Land Management (USDI, USFWS 1997).

The remaining species listed as endangered by the USFWS for Garfield and Kane Counties are fish, including the **Colorado pikeminnow** (*Ptychocheilus lucius*), **razorback sucker** (*Xyrauchen texanus*), **humpback chub** (*Gila cypha*), and **bonytail** (*Gila elegans*). None of these is found within Bryce Canyon, primarily due to a lack of appropriate habitat (K. Legg, personal communication 2004).

State-Listed or Other Sensitive Species
Three other species that occur in Bryce Canyon are listed by the State of Utah or recognized by park staff as sensitive or rare as discussed below.

The **peregrine falcon** *(Falco peregrinus anatum)* was removed from the federal list of endangered and threatened species in 1999 and is not on the state list, but Bryce Canyon staff continues to keep data on nesting sites. Surveys for peregrines have been conducted at Bryce Canyon National Park since 1982. All nesting territories are located to the east of the rim and south of the main amphitheater, well away from the proposed action. There are seven known nesting sites/territories within the park, all located along the breaks or cliffs. Falcons nest on cliff ledges, but hunt in surrounding open woodlands and grasslands.

The **northern goshawk** *(Accipiter gentilis)*, a state-listed species that is under a Conservation Agreement, is known to nest in the park and hunt over open grasslands.

The **fringed myotis** *(Myotis thysandes)* is listed as a state wildlife species of concern and has been documented in and near the park. A bat survey performed in 1995 using mist nets caught fringed myotis at two of six locations in the park, along East Creek and Yovimpa Pass. Habitat along these drainages was characterized as montane grassland and montane forest/woodland (Foster et al. 1995).